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NATIONAL COMMUNICATIONS FROM PARTIES INCLUDED IN ANNEX I TO THE CONVENTION

GREENHOUSE GAS INVENTORY DATA, 1990-1997

Report on national greenhouse gas inventory data from Annex I Parties for 1990 to 1997

Note by the secretariat

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I. INTRODUCTION

A. Mandate

1. By its decision 6/CP.3, the Conference of the Parties (COP) requested the secretariat to collect, process and publish, on a regular basis, national greenhouse gas (GHG) inventories submitted annually by Annex I Parties in accordance with decision 9/CP.2.[1] By its decision 11/CP.4, the COP requested Parties included in Annex I to the Convention (Annex I Parties) to submit to the secretariat, in accordance with Article 12.1 and 12.2 of the Convention, national inventory data on GHG emissions by sources and removals by sinks on an annual basis by 15 April for the period up to the last but one year prior to the year of submission. The submission of national inventory data for the years 1990 to 1997 was due by 15 April 1999.

B. Scope of the note

2. The Subsidiary Body for Implementation (SBI), at its tenth session, noted that as of June 1999 only 16 Annex I Parties had submitted their national GHG inventories. Since June additional submissions have been made. The set of the latest available GHG data for 1990-1997, and data from earlier submissions for Parties that have not yet reported inventories this year, have been compiled in this document. It contains a brief description of the status of reporting of annual GHG emission inventories, highlighting the timeliness of reporting and completeness of the data reported. The tables contain data on GHG emissions and removals by 38 Annex I Parties for the period 1990-1997, where available, as provided in the annual submissions of GHG inventories or national communications.

II. STATUS OF REPORTING

3. The tables include data from the 22 out of 39 Annex I Parties that have submitted their greenhouse gas inventory data due on 15 April 1999.[2] Of these 22 submissions, all but five provided their information in electronic form, in addition to printed materials. They also include data from 18 Parties that reported annual inventories in 1998 or included GHG inventories in their first or second national communications. In accordance with decision 4/CP.3, Croatia, Liechtenstein, Monaco and Slovenia have been added to Annex I to the Convention. The amendment adding these Parties to Annex I entered into force on 13 August 1998. Information for these Parties has been included in this report, with the exception of Croatia, which has not yet submitted an annual inventory or national communication.

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[1] For the full texts of decisions adopted by the Conference of the Parties at its second, third and fourth sessions, see documents FCCC/CP/1996/15/Add.1, FCCC/CP/1997/7/Add.1 and FCCC/CP/1998/16/Add.1, respectively.

[2] These Parties are: Austria, Bulgaria, Canada, Czech Republic, Denmark, Estonia, European Community, Finland, France, Germany, Japan, Latvia, Lithuania, Monaco, New Zealand, Norway, Poland, Sweden, Switzerland, Ukraine (draft), United Kingdom of Great Britain and Northern Ireland, United States of America. Only Austria, Finland, Lithuania, New Zealand and Norway submitted their inventories on or before 15 April 1999.

4. The European Community (EC) has submitted an annual inventory for the years 1990, 1994, 1995 and 1996. As these data did not correspond in all cases to the information provided by member States, the secretariat has chosen to present the aggregate summary tables for the EC separate from the other tables.

5. As not all Parties provided recent submissions, or did not include data for all years in their most recent submissions, data have been compiled for the period 1990-1997 from the various sources. Table 1 below provides an indication of which inventory submissions or national communications were the source of data for the relevant years. As the information for these years for several Parties has been taken from various submissions, trends in emissions may not be consistent. Furthermore, as not all Parties provided data for 1997 (the most recent year included in this document),[3] no totals or percentage contribution by sector are given for that year.

6. The data available from the various submissions are not always complete. In addition to not having data for all years, data were not always available for all gases or source and sink categories required in the guidelines. Where data were not available, the tables contain blank spaces.

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[3] Germany and Ukraine also provided some data for 1998, although these are not included in the document.

Table 1. Sources of GHG emissions data (by Party and type of submission)[a]

Party	Base year other than 1990	1990	1991	1992	1993	1994	1995	1996	1997
Australia		INV98	INV98	INV98	INV98	INV98	INV98	INV98	no data
Austria		INV99	INV99	INV99	INV99	INV99	INV99	INV99	INV99
Belgium		INV98	INV98	INV98	INV98	INV98	INV98	INV98	no data
Bulgaria	NC1 (1988)	NC2	NC2	NC2	NC2	NC2	NC2	no data	INV99
Canada		INV99	INV99	INV99	INV99	INV99	INV99	INV99	INV99
Czech Republic[b]		NC2 & INV99	NC2 & INV99	NC2 & INV99	NC2 & INV99	NC2 & INV99	NC2 & INV99	INV98 & INV99	INV99
Denmark		NC2	NC2	NC2	NC2	NC2	NC2	INV98	INV99
Estonia		NC2	NC2	NC2	NC2	NC2	NC2	NC2	INV99
European Community		INV99	no data	no data	no data	INV99	INV99	INV99	no data
Finland		INV98	NC2	NC2	NC2	NC2	INV98	INV98	INV99
France		INV99	INV99	INV99	INV99	INV99	INV99	INV99	INV99
Germany		INV99	INV99	INV99	INV99	INV99	INV99	INV99	INV99
Greece		INV98	INV98	INV98	INV98	INV98	INV98	INV98	no data
Hungary	NC1 (1985-1987)	NC1	INV98	INV98	INV98	INV98	INV98	INV98	no data
Iceland		NC2	NC2	NC2	NC2	NC2	NC2	no data	no data
Ireland		NC2	NC2	NC2	NC2	NC2	INV98	INV98	no data
Italy		NC2	no data	no data	no data	NC2	NC2	no data	no data
Japan		INV99	INV99	INV99	INV99	INV99	INV99	INV99	INV99
Latvia[c]		NC2	NC2	NC2	NC2	NC2	NC2	INV98	INV99
Liechtenstein		RP195	no data	no data	no data	no data	no data	no data	no data
Lithuania		NC1	no data	no data	no data	no data	INV99	INV99	INV99
Luxembourg		NC2	no data	no data	no data	NC2	NC2	no data	no data
Monaco		INV99	INV99	INV99	INV99	INV99	INV99	INV99	INV99
Netherlands		INV98	INV98	INV98	INV98	INV98	INV98	INV98	no data
New Zealand[b]		INV98&INV99	INV98&INV99	INV98&INV99	INV98&INV99	INV98&INV99	INV98&INV99	INV98&INV99	INV98&INV99
Norway		INV99	INV99	INV99	INV99	INV99	INV99	INV99	INV99
Poland	NC2 (1988)	NC2	no data	NC2	no data	NC2	no data	INV98	INV99
Portugal		NC2	NC2	NC2	NC2	NC2	no data	no data	no data
Romania	NC2 (1989)	NC2	NC2	NC2	NC2	NC2	no data	no data	no data
Russian Federation		NC2	NC2	NC2	NC2	NC2	NC2	no data	no data
Slovakia		NC2	NC2	NC2	NC2	NC2	INV98	INV98	no data
Slovenia[d]	no data (1986)	NC1	no data	no data	no data	no data	no data	no data	no data
Spain		INV98	INV98	INV98	INV98	INV98	INV98	no data	no data
Sweden		INV99	NC2	NC2	NC2	NC2	NC2	INV99	INV99
Switzerland[e]		NC2	NC2	NC2	NC2	NC2	NC2	INV98	INV99
Ukraine[e]		INV99	INV99	INV99	INV99	INV99	INV99	INV99	INV99
United Kingdom		INV99	INV99	INV99	INV99	INV99	INV99	INV99	INV99
United States of America		INV99	INV99	INV99	INV99	INV99	INV99	INV99	INV99

[a] This table indicates the source of GHG emissions data as well as whether data were available for specific years. However, it does not indicate whether the inventory submitted for that year covers all gases, categories, etc.

[b] The Czech Republic provided revised CH_4 data for 1990 to 1996 in the inventory submission of 1999. New Zealand provided revised land-use change and forestry data in the inventory submission of 1999.

[c] Data for 1990 to 1994 are taken from the 2nd national communication and the supplemental inventory submission provided by the Party.

[d] A preliminary GHG inventory was submitted as part of the forthcoming 1st national communication.

[e] Emissions of CO, NO_x and NMVOC were not reported in the inventory submission of 1999, but were included in the 1st national communication.

NC1–1st national communication **INV98**–inventory submission 1998 **no data**–data were not provided in the national communications or annual inventory submissions
NC2–2nd national communication **INV99**–inventory submission 1999 **RP195**–Report submitted in 1995

Tables

General notes

The tables below contain numerical data on GHG inventories for 38 Annex I Parties as submitted in annual GHG emission inventories or national communications. They provide data for 1990-1997 for individual Annex I Parties, although the degree of coverage varies. This is due to differences in the coverage of years in the annual inventory submissions of Parties, as well as to lack of information in some instances.

The tables provide inventory data on carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF_6), ozone precursors and sulphur dioxide (SO_2), and include information on international bunkers. Information on land-use change and forestry is included in aggregate estimates, and separately from other CO_2 estimates, recognizing the ongoing methodological work by the Intergovernmental Panel on Climate Change (IPCC) in this sector. To present information on HFCs, PFCs, SF_6 and aggregate greenhouse gases in a comparable manner the secretariat has used IPCC 1995 global warming potentials (GWPs) to present information in terms of CO_2 equivalents. The footnotes to the tables should be treated as an integral part of the tables.

Tables A.1 and A.2 contain information on aggregate emissions of all greenhouse gases combined (expressed as CO_2 equivalent) for the major source categories. Inventory data on the individual greenhouse gases are presented in tables A.3 to A.17. The trends in total greenhouse gases and in emissions of the various gases, and for the most important sectors for 1990 to 1997, are given in tables B.1 to B.15. Emission estimates reported by the European Community are presented in tables C.1 to C.4.

It should be noted that figures may differ slightly from those submitted to the secretariat as a result of rounding during data input and processing, corrections of typographical and calculation errors or omissions, and the presentation (for consistency and comparability) of subtotals and totals not provided in the annual inventory submissions, communications or other submissions. Some differences are also due to the fact that, in striving to ensure the consistency and comparability of results, some of the estimates reported had to be converted so that they concur with the format of the current IPCC Guidelines for the reporting of greenhouse gas emissions.

Explanatory notes

Blanks in the tables signify an absence of quantitative information. The secretariat has chosen to leave the spaces blank in order not to complicate the reading of the tables. The figure "zero" appears in the table only when reported as such by Parties.

The IPCC 1996 Revised Guidelines for National Greenhouse Gas Inventories are referred to in this document as the IPCC Guidelines, and the revised guidelines for the preparation of national communications by Annex I Parties (FCCC/CP/1996/15/Add.1, decision 9/CP.2, annex) as the UNFCCC guidelines. Categories of sources of GHG emissions or their sinks corresponding to

the IPCC Guidelines nomenclature are given in *italics*.

The following chemical symbols and abbreviations have been used:

CF_4	perfluoromethane
C_2F_6	perfluoroethane
C_3F_8	perfluoropropane
C_4F_{10}	perfluorobutane
C_6F_{14}	perfluorohexane
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
HFCs	hydrofluorocarbons
N_2O	nitrous oxide
NO_x	nitrogen oxides
NMVOCs	non-methane volatile organic compounds
PFCs	perfluorocarbons
SF_6	sulphur hexafluoride
SO_2	sulphur dioxide

The following units of mass have been used:

Gg	gigagram (10^9 grams)
Mg	megagram (10^6 grams)

The following other abbreviations have been used:

GHG	greenhouse gas
GWP	global warming potential

Table A.1. **Aggregate emissions and removals of all greenhouse gases[a] (CO_2 equivalent) by source/sink category, including and excluding land-use change and forestry, 1990 (Gigagrams and percentage of total by Party)**

	Fuel combustion		Fugitive fuel		Industrial processes		Agriculture		Other[b]		Total (excluding land-use change and forestry)[c]	Land-use change and forestry[d] (CO_2)	Total (including land-use change and forestry)[e]	Percentage increase or decrease in emissions with the inclusion of land-use change and forestry
	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg) (A)	(B)	(C=A+B)	(B/A)
Australia	267 298	64.3	29 364	7.1	12 085	2.9	86 732	20.9	20 166	4.9	415 656	58 873	474 529	14.2
Austria	47 628	64.6	2 228	3.0	12 891	17.5	5 395	7.3	5 585	7.6	73 727	- 13 300	60 427	-18.0
Belgium	108 641	78.0	1 289	0.9	13 156	9.4	11 524	8.3	4 668	3.4	139 276	- 2 057	137 219	-1.5
Bulgaria[f]	93 669	68.8	6 617	4.9	9 165	6.7	10 604	7.8	16 039	11.8	136 093	- 4 657	131 436	-3.4
Canada	426 450	71.1	37 300	6.2	52 370	8.7	61 050	10.2	23 100	3.9	599 450	- 44 000	555 450	-7.3
Czech Republic	167 518	88.2	8 276	4.4	6 734	3.5	5 001	2.6	2 309	1.2	189 837	- 2 281	187 556	-1.2
Denmark[g]	51 728	72.2	492	0.7	1 006	1.4	17 139	23.9	1 624	2.3	71 658	- 924	70 734	-1.3
Estonia	37 678	92.5			613	1.5	1 543	3.8	898	2.2	40 719	- 11 317	29 402	-27.8
Finland[h]	56 010	77.0	3 525	4.8	2 510	3.4	5 101	7.0	5 640	7.7	72 786		72 786	
France	371 643	66.2	10 874	1.9	56 118	10.0	90 662	16.2	32 035	5.7	561 330	- 59 617	501 713	-10.6
Germany	1 002 671	82.9	32 781	2.7	62 018	5.1	69 709	5.8	42 868	3.5	1 210 047	- 33 719	1 176 328	-2.8
Greece[h]	79 612	75.7	928	0.9	9 955	9.5	12 069	11.5	2 671	2.5	105 235		105 235	
Hungary[i]	82 842	81.5	9 414	9.3	3 587	3.5	5 790	5.7			101 634	- 3 097	98 537	-3.0
Iceland[h]	1 690	65.6	79	3.1	445	17.3	322	12.5	40	1.5	2 577		2 577	
Ireland	30 008	52.8	214	0.4	2 439	4.3	20 681	36.4	3 719	6.5	56 861	- 5 160	51 701	-9.1
Italy	415 900	77.9	8 842	1.7	35 770	6.7	42 341	7.9	30 883	5.8	533 762	- 24 949	508 813	-4.7
Japan	1 060 838	87.4	3 491	0.3	105 469	8.7	20 552	1.7	22 913	1.9	1 213 262	- 83 903	1 129 359	-6.9
Latvia	24 341	68.2	1 118	3.1	563	1.6	9 157	25.7	491	1.4	35 669	- 10 826	24 843	-30.4

Liechtenstein										260	-22	238	-8.5
Lithuania	37 737	73.2	548	1.1	2 641	5.1	7 143	13.9	3 480	6.8	51 548	- 8 848	42 700	-17.2
Luxembourg	12 181	90.6	34	0.3	585	4.4	518	3.9	130	1.0	13 448	- 295	13 153	-2.2
Monaco[b]	108	97.3							3	2.7	111		111	
Netherlands[g]	159 904	73.7	4 175	1.9	20 461	9.4	17 487	8.1	13 776	6.3	217 052	- 1 500	215 552	-0.7
New Zealand	22 652	31.2	1 136	1.6	3 015	4.2	42 580	58.7	3 134	4.3	72 516	- 20 888	51 628	-28.8
Norway	26 986	52.0	2 320	4.5	13 654	26.3	4 911	9.5	4 003	7.7	51 874	- 9 590	42 284	-18.5
Poland[f]	466 155	82.6	26 261	4.7	20 110	3.6	31 453	5.6	20 307	3.6	564 286	- 34 746	529 540	-6.2
Portugal	44 145	64.5	249	0.4	4 030	5.9	6 703	9.8	13 315	19.5	68 442	- 1 152	67 290	-1.7
Romania[f]	191 757	72.4	29 742	11.2	17 150	6.5	21 170	8.0	5 061	1.9	264 879	- 2 925	261 954	-1.1
Russian Federation	2 308 494	75.9	424 000	13.9	88 525	2.9	168 260	5.5	50 783	1.7	3 040 062	- 392 000	2 648 062	-12.9
Slovakia	57 296	79.0	2 562	3.5	4 245	5.9	6 872	9.5	1 521	2.1	72 496	- 4 257	68 239	-5.9
Slovenia	13 594	70.8	1 061	5.5	641	3.3	2 337	12.2	1 601	8.3	19 212	- 2 293	16 919	-11.9
Spain[h]	215 441	71.5	14 836	4.9	20 955	7.0	39 126	13.0	11 073	3.7	301 431		301 431	
Sweden	54 028	77.8	53	0.1	4 716	6.8	8 630	12.4	2 061	3.0	69 467	- 34 368	35 099	-49.5
Switzerland	40 948	76.2	363	0.7	3 471	6.5	6 024	11.2	2 937	5.5	53 749	- 4 360	49 389	-8.1
Ukraine	674 904	73.4	130 616	14.2	38 816	4.2	56 018	6.1	18 836	2.0	919 220	- 52 107	867 113	-5.7
United Kingdom	565 763	77.8	39 392	5.4	44 203	6.1	52 914	7.3	25 088	3.4	727 359	21 413	748 772	2.9
United States of America	4 943 946	82.6	222 012	3.7	166 037	2.8	433 825	7.3	217 750	3.6	5 983 570	-1 142 200	4 841 370	-19.1
Total	14 162 203	78.5	1 056 191	5.9	840 148	4.7	1 381 342	7.7	610 505	3.4	18 050 561	-1 931 073	16 119 488	-10.7

[a] Aggregate emissions of CO_2, CH_4 and N_2O, and HFCs, PFCs and SF_6 where reported (see table A.11), using 1995 IPCC global warming potentials.
[b] Includes *solvent use*, *waste*, *other* and CH_4 and N_2O from *land-use change and forestry*.
[c] Aggregate emissions of all greenhouse gases excluding CO_2 emissions and removals from *land-use change and forestry*.
[d] CO_2 estimates for *land-use change and forestry* as reported in accordance with the present IPCC Guidelines for National Greenhouse Gas Inventories (see table B.7).
[e] Aggregate emissions of all greenhouse gases including CO_2 emissions from *land-use change and forestry*.
[f] In accordance with decision 9/CP.2, some Parties with economies in transition use base years other than 1990. Bulgaria (1988); Hungary (average of 1985-1987); Poland (1988) and Romania (1989).
[g] The Party also provided CO_2 estimates adjusted for temperature correction, and in the case of Denmark also for electricity exchange, but non-adjusted estimates were used for the calculation of aggregate emissions for comparison and consistency purposes.
[h] The Party did not provide any estimates from the *land-use change and forestry* sector in its national inventory.

Table A.2. **Aggregate emissions and removals of all greenhouse gases[a] (CO_2 equivalent) by source/sink category, including and excluding land-use change and forestry, 1997 (Gigagrams and percentage of total by Party)**

	Fuel combustion		Fugitive fuel		Industrial processes		Agriculture		Other[b]		Total (excluding land-use change and forestry)[c]	Land-use change and forestry[d] (CO_2)	Total (including land-use change and forestry)[e]	Percentage increase or decrease in emissions with the inclusion of land-use change and forestry
	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg) (A)	(Gg) (B)	(Gg) (C=A+B)	(%) (B/A)
Australia														
Austria	52 443	67.0	2 743	3.5	12 462	15.9	5 257	6.7	5 321	6.8	78 226	- 13 753	64 473	-17.6
Belgium														
Bulgaria	56 579	67.0	4 806	5.7	7 600	9.0	3 779	4.5	11 697	13.8	84 461	- 5 852	78 609	-6.9
Canada	483 870	70.9	53 900	7.9	56 440	8.3	64 400	9.4	24 662	3.6	682 580	- 19 000	663 580	-2.8
Czech Republic	135 919	85.9	6 508	4.1	4 113	2.6	8 681	5.5	3 010	1.9	158 232	- 4 639	153 593	-2.9
Denmark[f]	63 326	75.7	889	1.1	1 692	2.0	16 001	19.1	1 749	2.1	83 656	- 997	82 659	-1.2
Estonia	20 623	89.3	668	2.9	354	1.5	750	3.2	703	3.0	23 097	7 993	31 090	34.6
Finland[g]	62 425	81.4	3 529	4.6	2 294	3.0	4 473	5.8	3 960	5.2	76 684		76 684	
France	383 533	68.7	9 105	1.6	50 309	9.0	87 651	15.7	27 469	4.9	558 070	- 67 772	490 298	-12.1
Germany	884 582	84.6	24 255	2.3	60 168	5.8	58 527	5.6	18 640	1.8	1 046 172	- 33 493	1 012 679	-3.2
Greece														
Hungary														
Iceland														
Ireland														
Italy														
Japan	1 159 099	90.5	2 891	0.2	69 251	5.4	18 580	1.5	30 545	2.4	1 280 365		1 280 365	
Latvia	13 042	81.7	187	1.2	179	1.1	1 895	11.9	655	4.1	15 959	- 14 315	1 643	-89.7
Liechtenstein														

Lithuania[h]													
Luxembourg													
Monaco[g]	142	96.6							5	3.4	147		147	
Netherlands														
New Zealand	27 423	36.0	1 386	1.8	3 401	4.5	40 948	53.8	3 003	3.9	76 161	- 17 008	59 153	-22.3
Norway	32 505	58.3	2 626	4.7	11 356	20.4	5 058	9.1	4 251	7.6	55 775	- 16 499	39 276	-29.6
Poland	354 221	83.1	19 772	4.6	15 774	3.7	22 228	5.2	14 225	3.3	426 220	- 40 521	385 699	-9.5
Portugal														
Romania														
Russian Federation														
Slovakia														
Slovenia														
Spain														
Sweden	55 638	76.8			7 438	10.3	8 383	11.6	1 281	1.8	72 430	- 31 774	40 656	-43.9
Switzerland	40 514	77.5	334	0.6	2 894	5.5	5 575	10.7	2 968	5.7	52 290	- 5 400	46 890	-10.3
Ukraine	307 526	65.9	90 670	19.4	18 441	4.0	31 715	6.8	18 109	3.9	466 471	- 68 806	397 664	-14.8
United Kingdom	530 126	80.5	23 952	3.6	34 619	5.3	51 735	7.9	18 270	2.8	658 702	15 518	674 219	2.4
United States of America	5 467 901	82.5	212 461	3.2	212 124	3.2	481 626	7.3	256 700	3.9	6 630 811	- 764 683	5 866 128	-11.5

[a] Aggregate emissions of CO_2, CH_4 and N_2O, and HFCs, PFCs and SF_6 where reported (see table A.11), using 1995 IPCC global warming potentials.
[b] Includes *solvent use*, *waste*, *other* and CH_4 and N_2O from *land-use change and forestry*.
[c] Aggregate emissions of all greenhouse gases excluding CO_2 emissions from *land-use change and forestry*.
[d] CO_2 estimates for *land-use change and forestry* as reported in accordance with the present IPCC Guidelines for National Greenhouse Gas Inventories (see table B.7).
[e] Aggregate emissions of all greenhouse gases including CO_2 emissions from *land-use change and forestry*.
[f] The Party also provided CO_2 estimates adjusted for temperature correction, and in the case of Denmark also for electricity exchange, but non-adjusted estimates were used for the calculation of aggregate emissions for comparison and consistency purposes.
[g] The Party did not provide any estimates from the *land-use change and forestry* sector in its national inventory.
[h] The Party reported only emissions of CO_2 and CH_4, not N_2O, for 1997, so no aggregate emissions are provided here.

Table A.3. Anthropogenic CO_2 emissions by source category, excluding land-use change and forestry,[a] 1990 (Gigagrams and percentage of total by Party)

	Energy				Industrial processes		Waste		Other[c]		Total
	Fuel combustion[b]		Fugitive fuel								
	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)
Australia	262 623	95.4	6 066	2.2	6 655	2.4					275 344
Austria	46 620	75.1	2 139	3.4	12 703	20.5	38	0.1	541	0.9	62 042
Belgium	105 919	91.2			9 188	7.9	983	0.8			116 090
Bulgaria[d]	90 327	93.2			5 890	6.1	661	0.7			96 878
Canada	412 000	89.3	10 000	2.2	32 000	6.9	250	0.1	7 000	1.5	461 250
Czech Republic	160 073	96.7			5 417	3.3					165 490
Denmark[e]	50 898	97.4	240	0.5	1 006	1.9			133	0.3	52 277
Estonia	37 184	98.4			613	1.6					37 797
Finland	53 900	91.0	3 500	5.9	1 200	2.0					59 200
France	364 315	92.1	4 306	1.1	21 211	5.4	3 485	0.9	2 189	0.6	395 506
Germany	986 832	97.3			27 668	2.7					1 014 500
Greece	77 256	90.5			7 804	9.1	103	0.1	186	0.2	85 349
Hungary[d]	80 089	95.7			3 587	4.3					83 676
Iceland	1 674	77.9	79	3.7	391	18.2			4	0.2	2 147
Ireland	29 038	94.5			1 627	5.3	54	0.2			30 719
Italy	400 047	92.5	2 353	0.5	27 520	6.4	688	0.2	1 999	0.5	432 607
Japan	1 052 964	93.6			58 795	5.2	12 773	1.1			1 124 532
Latvia	24 209	97.7			563	2.3					24 771
Liechtenstein											208
Lithuania	37 332	94.4			2 203	5.6					39 535
Luxembourg	12 133	95.2			585	4.6	20	0.2	12	0.1	12 750
Monaco	106	98.1					2	1.9			108
Netherlands[e]	157 530	97.6	420	0.3	1 880	1.2	1 520	0.9	10	0.0	161 360

New Zealand	22 240	88.1	615	2.4	2 386	9.5					25 241
Norway	26 403	75.0	1 900	5.4	6 718	19.1	37	0.1	144	0.4	35 202
Poland[c]	462 998	97.1	53	0.0	13 574	2.8					476 625
Portugal	43 281	91.8	159	0.3	3 421	7.3			262	0.6	47 123
Romania[d]	185 575	95.3			9 244	4.7	7	0.0			194 826
Russian Federation	2 298 900	96.9	27 100	1.1	46 300	2.0					2 372 300
Slovakia	56 585	94.3			3 447	5.7					60 032
Slovenia	13 294	95.4			641	4.6					13 935
Spain	207 592	91.7	414	0.2	17 690	7.8			727	0.3	226 423
Sweden	51 328	92.6	53	0.1	3 786	6.8			276	0.5	55 443
Switzerland	40 330	89.5	56	0.1	3 363	7.5	1 320	2.9			45 070
Ukraine	672 075	95.5	0	0.0	31 717	4.5					703 792
United Kingdom	558 091	95.5	11 481	2.0	13 939	2.4	660	0.1			584 171
United States of America	4 866 000	98.7	8 400	0.2	54 500	1.1					4 928 900
Total	13 947 762	96.2	79 334	0.5	439 231	3.0	22 602	0.2	12 756	0.1	14 503 220

[a] Emissions and removals from the *land-use change and forestry* sector were excluded from this table for comparison and consistency purposes. They are however presented in tables A.1 and B.7.
[b] For further details on *fuel combustion* (see table A.5).
[c] Includes *solvent use* and *agriculture*.
[d] In accordance with decision 9/CP.2, some Parties with economies in transition use base years other than 1990: Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989).
[e] Party also provided estimates adjusted for temperature correction, but non-adjusted estimates were included in this table for comparison and consistency purposes.

Table A.4. Anthropogenic CO_2 emissions by source category, excluding land-use change and forestry,[a] 1997 (Gigagrams and percentage of total by Party)

	Energy				Industrial processes		Waste		Other[c]		Total
	Fuel combustion[b]		Fugitive fuel								
	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)
Australia											
Austria	51 260	77.6	2 630	4.0	11 635	17.6	119	0.2	417	0.6	66 062
Belgium											
Bulgaria	53 458	90.4			5 369	9.1	321	0.5			59 148
Canada	466 000	89.7	14 000	2.7	38 000	7.3	280	0.1	1 000	0.2	519 280
Czech Republic	133 925	97.7	241	0.2	2 498	1.8	357	0.3	104	0.1	137 125
Denmark[d]	62 148	96.6	512	0.8	1 539	2.4			123	0.2	64 322
Estonia	20 362	98.3			354	1.7					20 716
Finland	59 600	92.3	3 500	5.4	900	1.4					64 600
France	374 539	93.1	4 237	1.1	17 543	4.4	3 856	1.0	2 063	0.5	402 237
Germany	869 000	97.2			25 000	2.8					894 000
Greece											
Hungary											
Iceland											
Ireland											
Italy											
Japan	1 150 675	93.5			59 501	4.8	20 655	1.7			1 230 831
Latvia	12 663	98.6			179	1.4					12 842
Liechtenstein											
Lithuania	15 800	97.5			400	2.5					16 200
Luxembourg											
Monaco	139	97.4					4	2.6			143
Netherlands[d]											
New Zealand	26 967	89.0	692	2.3	2 626	8.7					30 284

Norway	31 570	76.2	1 933	4.7	7 750	18.7	40	0.1	137	0.3	41 430
Poland	350 876	97.0	86	0.0	10 664	2.9					361 626
Portugal											
Romania											
Russian Federation											
Slovakia											
Slovenia											
Spain[f]											
Sweden	52 712	93.4			3 716	6.6					56 428
Switzerland	39 700	91.5	70	0.2	2 200	5.1	1 400	3.2			43 370
Ukraine	307 091	95.1	0	0.0	15 816	4.9					322 907
United Kingdom	520 944	96.4	7 832	1.4	11 839	2.2	29	0.0			540 643
United States of America	5 375 164	98.5	15 235	0.3	65 155	1.2					5 455 553

[a] Emissions and removals from the *land-use change and forestry* sector were excluded from this table for comparison and consistency purposes. They are however presented in tables A.2 and B.7.
[b] For further details on *fuel combustion* (see table A.6).
[c] Includes *solvent use* and *agriculture*.
[d] Party also provided estimates adjusted for temperature correction, and in the case of Denmark also for electricity exchange, but non-adjusted estimates were included in this table for comparison and consistency purposes.

Table A.5. Anthropogenic CO_2 emissions from fuel combustion, 1990 (Gigagrams and percentage of total by Party)

	Energy industries		Industry		Commercial, Institutional, Residential, Agriculture, Forestry, Fishing		Transport		Other[a]		Total
	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)
Australia	141 807	54.0	47 363	18.0	12 178	4.6	59 596	22.7	1 680	0.6	262 623
Austria	12 363	26.5	7 432	15.9	13 256	28.4	13 569	29.1			46 620
Belgium	28 140	26.6	31 027	29.3	26 262	24.8	19 964	18.8	526	0.5	105 919
Bulgaria[b]	35 079	38.8	33 881	37.5	8 941	9.9	10 753	11.9	1 673	1.9	90 327
Canada	141 000	34.2	54 700	13.3	69 900	17.0	147 000	35.7			412 000
Czech Republic	94 090	58.8	23 104	14.4	35 948	22.5	7 959	5.0			160 073
Denmark[c]	25 865	50.8	5 776	11.3	8 664	17.0	10 474	20.6	119	0.2	50 898
Estonia	28 461	76.5	2 897	7.8	3 169	8.5	2 656	7.1			37 184
Finland	18 400	34.1	14 100	26.2	7 300	13.5	11 900	22.1	2 200	4.1	53 900
France	65 495	18.0	82 266	22.6	93 987	25.8	122 566	33.6			364 315
Germany	412 896	41.8	196 457	19.9	203 439	20.6	162 281	16.4	11 760	1.2	986 832
Greece	43 658	56.5	9 820	12.7	8 168	10.6	15 170	19.6	440	0.6	77 256
Hungary[b]	36 928	46.1	10 893	13.6	23 174	28.9	7 741	9.7	1 353	1.7	80 089
Iceland	4	0.2	243	14.5	704	42.1	721	43.1	2	0.1	1 674
Ireland	10 863	37.4	5 431	18.7	7 859	27.1	4 885	16.8			29 038
Italy	148 445	37.1	78 117	19.5	76 805	19.2	95 521	23.9	1 159	0.3	400 047
Japan	339 065	32.2	339 378	32.2	158 298	15.0	205 633	19.5	10 591	1.0	1 052 964
Latvia	9 530	39.4	2 683	11.1	6 142	25.4	5 829	24.1	25	0.1	24 209
Liechtenstein											
Lithuania	16 425	44.0	5 396	14.5	6 810	18.2	5 791	15.5	2 910	7.8	37 332
Luxembourg	1 883	15.5	6 353	52.4	1 272	10.5	2 625	21.6			12 133
Monaco	37	35.0			29	27.8	39	37.2			106
Netherlands[c]	51 040	32.4	41 400	26.3	35 400	22.5	28 560	18.1	1 100	0.7	157 530

New Zealand	6 040	27.2	4 710	21.2	2 733	12.3	8 645	38.9	113	0.5	22 240
Norway	7 396	28.0	3 043	11.5	2 431	9.2	13 533	51.3			26 403
Poland[b]	260 537	56.3	60 900	13.2	111 229	24.0	28 238	6.1	2 094	0.5	462 998
Portugal	17 015	39.3	7 225	16.7	4 468	10.3	14 060	32.5	512	1.2	43 281
Romania[b]	89 214	48.1	56 678	30.5	28 274	15.2	7 893	4.3	3 517	1.9	185 575
Russian Federation											2 298 900
Slovakia	11 970	21.2	25 398	44.9	13 813	24.4	5 168	9.1	234	0.4	56 585
Slovenia	6 483	48.8	2 488	18.7	1 144	8.6	3 179	23.9			13 294
Spain	75 184	36.2	47 971	23.1	26 177	12.6	58 260	28.1			207 592
Sweden	8 849	17.2	13 050	25.4	10 672	20.8	18 650	36.3	107	0.2	51 328
Switzerland	963	2.4	5 406	13.4	18 322	45.4	14 668	36.4	972	2.4	40 330
Ukraine											672 075
United Kingdom	229 316	41.1	94 757	17.0	112 032	20.1	116 721	20.9	5 265	0.9	558 091
United States of America[d]	1 748 400	35.9	1 052 500	21.6	549 200	11.3	1 482 400	30.5	33 500	0.7	4 866 000
Total[e]	4 122 841	37.6	2 372 842	21.6	1 688 202	15.4	2 712 648	24.7	81 851	0.7	13 976 762

[a] All remaining emissions from non-specific fuel combustion including emissions from military fuel use.

[b] In accordance with decision 9/CP.2, some Parties with economies in transition use base years other than 1990: Bulgaria (1988); Hungary (average of 1985-1987); Poland (1988) and Romania (1989).

[c] Party also provided estimates adjusted for temperature correction, and in the case of Denmark also for electricity exchange, but non-adjusted estimates were included in this table for comparison and consistency purposes.

[d] *Fuel combustion* emissions from territories of the United States of America are included under *other*.

[e] The percentage of the total accounted for by each category has been calculated on the basis of the overall total excluding the Russian Federation and Ukraine (10,976,787 Gg) since data for the individual categories were not provided. However, the total for all the Parties given in the last column (13,947,762 Gg) does include the Russian Federation and Ukraine.

Table A.6. Anthropogenic CO_2 emissions from fuel combustion, 1997 (Gigagrams and percentage of total by Party)

	Energy industries		Industry		Commercial, Institutional, Residential, Agriculture, Forestry, Fishing		Transport		Other[a]		Total
	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)
Australia											
Austria	12 277	24.0	8 043	15.7	15 136	29.5	15 805	30.8			51 260
Belgium											
Bulgaria	31 067	58.1	13 903	26.0	2 702	5.1	5 674	10.6	112	0.2	53 458
Canada	161 000	34.5	53 900	11.6	77 200	16.6	174 000	37.3			466 000
Czech Republic	59 180	44.2	43 341	32.4	20 013	14.9	11 392	8.5			133 925
Denmark[b]	35 252	56.7	6 253	10.1	8 476	13.6	12 070	19.4	97	0.2	62 148
Estonia	17 214	84.5	656	3.2	1 396	6.9	1 097	5.4			20 362
Finland											59 600
France	56 654	15.1	82 917	22.1	96 824	25.9	138 144	36.9			374 539
Germany	348 000	40.0	143 000	16.5	199 000	22.9	175 000	20.1	4 000	0.5	869 000
Greece											
Hungary											
Iceland											
Ireland											
Italy											
Japan	356 396	31.0	352 957	30.7	171 551	14.9	251 376	21.8	18 395	1.6	1 150 675
Latvia	4 743	37.5	1 596	12.6	4 084	32.2	2 178	17.2	61	0.5	12 663
Liechtenstein											
Lithuania					11 700	74.1	4 100	25.9			15 800
Luxembourg											
Monaco	58	41.3			35	25.3	47	33.5			139
Netherlands											

New Zealand	6 891	25.6	6 100	22.6	2 734	10.1	11 242	41.7			26 967
Norway	10 404	33.0	3 847	12.2	2 023	6.4	15 296	48.5			31 570
Poland	192 784	54.9	70 025	20.0	60 857	17.3	26 662	7.6	549	0.2	350 876
Portugal											
Romania											
Russian Federation											
Slovakia											
Slovenia											
Spain											
Sweden	9 594	18.2	13 500	25.6	9 964	18.9	19 547	37.1	107	0.2	52 712
Switzerland	1 180	3.0	4 630	11.7	17 700	44.6	15 280	38.5	920	2.3	39 700
Ukraine											307 091
United Kingdom	184 615	35.4	91 401	17.5	118 205	22.7	123 756	23.8	2 967	0.6	520 94+
United States of America[c]	1 951 908	36.3	1 125 447	20.9	616 927	11.5	1 634 556	30.4	46 326	0.9	5 375 164

[a] All remaining emissions from non-specific fuel combustion including emissions from military fuel use.

[b] Party also provided estimates adjusted for temperature correction, and in the case of Denmark also for electricity exchange, but non-adjusted estimates were included in this table for comparison and consistency purposes.

[c] *Fuel combustion* emissions from territories of the United States of America are included under *other*.

Table A.7. **Anthropogenic CH_4 emissions by source category, 1990 (Gigagrams and percentage of total by Party)**

	Energy				Agriculture				Waste				
	Fuel combustion		Fugitive fuel		Livestock[a]		Other[b]				Other[c]		Total
	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)
Australia	109	2.0	1 108	20.7	2 869	53.7	331	6.2	704	13.2	223	4.2	5 345
Austria	20	4.4	4	0.9	173	37.5	36	7.7	227	49.4	0	0.0	460
Belgium	16	2.4	53	8.4	374	58.9	15	2.3	174	27.4	4	0.6	634
Bulgaria[d]	56	4.0	315	22.3	299	21.2	8	0.5	732	51.8	2	0.2	1 413
Canada	260	7.4	1 300	37.1	950	27.1			900	25.7	70	2.0	3 500
Czech Republic	59	7.6	394	50.6	204	26.2			105	13.5	16	2.1	779
Denmark	10	2.4	12	2.9	328	77.9			71	16.9			421
Estonia[e]	3	2.5			60	57.1			42	40.3	0	0.3	105
Finland	19	5.4	1	0.3	94	26.2			240	67.0	4	1.1	358
France	161	5.3	311	10.3	1 599	52.9	31	1.0	819	27.1	102	3.4	3 023
Germany	214	3.8	1 561	28.0	1 878	33.7	24	0.4	1 894	34.0			5 571
Greece	13	3.0	44	10.1	164	37.4	107	24.5	109	24.9			437
Hungary[d]	8	1.2	448	67.5	205	30.8	4	0.6					664
Iceland	0	1.4			12	85			2	13.6			14
Ireland	5	0.7	10	1.3	603	74.4	37	4.5	136	16.8	20	2.4	811
Italy	97	4.1	309	13.2	835	35.5	75	3.2	843	35.9	192	8.2	2 349
Japan	89	5.8	166	10.8	464	30.1	378	24.5	394	25.6	51	3.3	1 543
Latvia	2	1.3	53	28.6	111	59.7			19	10.4			186
Liechtenstein													1
Lithuania	5	1.4	26	6.9	181	47.8			166	43.8	0	0.1	378
Luxembourg	1	3.2	2	6.8	18	73.9			4	16.1			24
Monaco	0	56.3							0	43.7			0
Netherlands	35	2.7	179	13.8	505	39.1			568	44	3	0.3	1 292

New Zealand	11	0.6	25	1.5	1 492	89.2	0	0.0	141	8.4	5	0.3	1 674
Norway	13	4.1	20	6.3	101	31.9			182	57.4	1	0.3	317
Poland[d]	47	1.5	1 248	39.7	862	27.4	1	0.0	966	30.8	17	0.5	3 141
Portugal	15	1.8	4	0.5	192	23.7	19	2.3	578	71.5	0	0.0	809
Romania[d]	50	2.1	1 416	60.1	600	25.5	34	1.5	241	10.2	16	0.7	2 357
Russian Federation	200	0.8	18 900	71.3	4 930	18.6	130	0.5	1 940	7.3	400	1.5	26 500
Slovakia	25	6.1	122	29.8	187	45.7			65	15.9	10	2.4	409
Slovenia	7	3.8	51	28.7	44	24.8	0	0.1	76	42.9	1	0.3	176
Spain	76	3.5	687	31.5	810	37.1	115	5.3	491	22.5	2	0.1	2 181
Sweden	40	14.1			160	56.3			85	29.9			284
Switzerland	9	3.7	15	6.0	151	62			69	28.2	0	0.2	244
Ukraine[e]	36	0.4	6 220	66.2	2 254	24.0			892	9.5	0	0.2	9 402
United Kingdom	119	3.3	1 329	36.5	1 025	28.2	13	0.3	1 150	31.6	1	0.0	3 637
United States of America	656	2.2	10 172	34.3	8 300	28	475	1.6	10 000	33.7	57	0.2	29 660
Total	2 485	2.3	46 505	42.2	30 718	27.9	1 832	1.7	25 026	22.7	1 197	1.1	110 098

[a] Includes *enteric fermentation* and *manure management*.
[b] Includes *rice cultivation*, *agricultural soils*, *prescribed burning of savannas* and *field burning of agricultural residues*.
[c] Includes *industrial processes*, *solvent use* and *land-use change and forestry*.
[d] In accordance with decision 9/CP.2, some Parties with economies in transition use base years other than 1990: Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989).
[e] Total emissions from agriculture are reported under *livestock* since emissions were not further disaggregated by the Party.

Table A.8. **Anthropogenic CH_4 emissions by source category, 1997 (Gigagrams and percentage of total by Party)**

	Energy				Agriculture				Waste				
	Fuel combustion		Fugitive fuel		Livestock[a]		Other[b]				Other[c]		Total
	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)
Australia													
Austria	16	3.6	5	1.2	167	38	35	8.0	217	49.2	0	0.0	440
Belgium													
Bulgaria	5	0.6	229	25.6	110	12.3	3	0.4	542	60.7	4	0.4	892
Canada	290	6.7	1 900	44.2	1 070	24.9			1 000	23.3	40	0.9	4 300
Czech Republic	31	5.6	298	53.1	129	23.0			97	17.3	6	1.1	562
Denmark	13	3.1	18	4.2	322	76.1			70	16.6			423
Estonia	3	2.6	32	30.9	35	34.1			33	32.5			103
Finland	24	8.7	1	0.5	83	30.5			160	58.7	4	1.5	273
France	159	6.1	231	8.8	1 515	57.8	32	1.2	580	22.1	103	3.9	2 619
Germany	122	3.4	1 155	32.4	1 547	43.4			740	20.8			3 564
Greece													
Hungary													
Iceland													
Ireland													
Italy													
Japan	49	3.6	138	9.9	439	31.6	350	25.2	364	26.2	49	3.5	1 389
Latvia	12	13.0	9	9.6	44	47.6			28	29.7	0	0.0	93
Liechtenstein													
Lithuania[d]	12	3.8			88	29.1			145	48.0	0	0.0	302
Luxembourg													
Monaco	0	61.9							0	38.1			0
Netherlands													
New Zealand	11	0.7	33	2.1	1 415	88.8	0	0.0	129	8.1	7	0.4	1 594

Norway	15	4.3	33	9.4	108	30.9			194	55.4	1	0.3	350
Poland	55	2.4	937	41.1	597	26.2	1	0.1	677	29.7	12	0.5	2 279
Portugal													
Romania													
Russian Federation													
Slovakia													
Slovenia													
Spain													
Sweden	36	13.8			163	62.7			61	23.5			260
Switzerland	7	3.1	13	5.6	143	63.8	- 3	-1.3	65	28.8	0	0.2	224
Ukraine[d]	15	0.2	4 318	65.4	1 414	21.4			859	13.0	0	0.1	6 606
United Kingdom	94	3.5	768	28.2	1 004	36.8			861	31.6	1	0.0	2 727
United States of America	633	2.0	9 392	30.0	8 933	28.5	516	1.6	11 808	37.7	75	0.2	31 357

[a] Includes *enteric fermentation* and *manure management*.
[b] Includes *rice cultivation*, *agricultural soils*, *prescribed burning of savannas* and *field burning of agricultural residues*.
[c] Includes *industrial processes*, *solvent use* and *land-use change and forestry*.
[d] Total emissions from agriculture are reported under *livestock* since emissions were not further disaggregated by the Party.

Table A.9. **Anthropogenic N_2O emissions by source category, 1990 (Gigagrams and percentage of total by Party)**

	Energy				Industrial		Agriculture		Waste				
	Transport		Other[a]								Other[b]		Total
	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)
Australia	5.2	6.9	2.7	3.6	1.6	2.2	63.0	84.1			2.4	3.2	74.9
Austria	1.0	15.7	0.9	13.1	0.6	9.1	3.3	50.5	0.0	0.1	0.8	11.5	6.5
Belgium	0.9	3.0	7.4	23.9	11.5	37.3	10.9	35.4	0.1	0.3			30.8
Bulgaria[c]	0.2	0.6	6.8	22.0	10.4	33.8	13.4	43.6					30.8
Canada	21.0	11.7	8.0	4.4	37.0	20.6	110.0	61.1	3.0	1.7	5.0	2.8	180.0
Czech Republic	0.8	3.1	19.2	74.4	3.3	12.8	2.3	8.9			0.2	0.8	25.8
Denmark[d]			2.0	5.9			33.0	97.1					34.0
Estonia	0.0	1.6	1.4	60.0			0.9	39.1			0.0	0.1	2.3
Finland	1.7	9.1	3.8	20.4	3.0	16.1	10.1	54.3					18.6
France	4.0	1.3	8.9	2.9	87.4	28.6	182.0	59.6	3.1	1.0	19.7	6.5	305.1
Germany	10.3	4.6	26.3	11.7	82.0	36.5	96.0	42.7	4.0	1.8	6.0	2.7	224.6
Greece	0.6	2.0	6.1	20.4	2.3	7.7	20.6	68.9	0.3	1.0			29.9
Hungary[c]	0.8	5.9	7.6	58.8			4.6	35.3					12.9
Iceland	0.0	4.8	0.0	4.8	0.2	38.1	0.2	52.4					0.4
Ireland	0.2	0.6	2.6	8.8	2.6	8.9	23.3	79.5	0.6	2.2	0.6	2.2	29.4
Italy	3.6	2.2	41.0	24.9	23.5	14.3	75.0	45.6	0.3	0.2	20.9	12.7	164.4
Japan	12.9	22.1	6.4	11.0	23.9	41.0	9.3	15.9	4.9	8.4	0.9	1.6	58.4
Latvia	0.1	0.5	0.2	0.7			22.0	97.6	0.3	1.2			22.5
Liechtenstein													0.1
Lithuania	0.2	1.4	0.8	5.8	1.4	10.6	10.8	82.1					13.2
Luxembourg	0.0	6.9	0.1	9.3			0.5	74.9	0.0	3.5	0.0	5.4	0.6
Monaco	0.0	24.1	0.0	43.9					0.0	31.9			0.0
Netherlands	4.6	7.2	0.7	1.1	31.5	49.3	22.2	34.7	0.5	0.8	0.5	0.8	63.9
New Zealand	0.4	1.0	0.3	0.7			36.3	97.7	0.2	0.5	0.0	0.1	37.1

Norway	1.0	5.9			7.0	41.2	9.0	52.9					17.0
Poland[c]	1.0	1.4	6.0	8.6	20.0	28.6	43.0	61.4					70.0
Portugal	0.5	3.8	1.3	8.9	1.9	13.9	7.4	52.5	2.9	20.9			14.0
Romania[c]	0.3	0.4	16.3	24.6	24.4	36.9	25.3	38.1					66.3
Russian Federation[d]			17.4	7.7	3.0	1.3	200	88.6	0.3	0.1	5.0	2.2	225.7
Slovakia[d]			0.6	4.8	2.1	16.8	9.5	76.0	0.3	2.4			12.5
Slovenia	0.1	2.4	0.4	7.7			4.6	89.9			0.0	0.1	5.1
Spain	2.0	2.1	18.2	19.3	10.4	11.0	63.5	67.4	0.1	0.1			94.2
Sweden	3.0	11.5	3.0	11.5	3.0	11.5	17.0	65.4					26.0
Switzerland	1.1	9.8	0.3	2.3	0.3	2.8	9.2	80.1	0.2	1.9	0.3	3.0	11.5
Ukraine[d]			6.7	11.6	22.9	39.5	28.0	48.3	0.1	0.2	0.2	0.7	58.0
United Kingdom	4.2	2.0	12.5	5.9	95.3	44.7	100.4	47.1	0.9	0.4			213.2
United States of America	161.0	14.2	46.0	4.1	96.0	8.5	805.0	71.1	25.0	2.2			1 133.0
Total	242.7	7.3	281.5	8.5	608.6	18.4	2 071.5	62.5	47.2	1.4	62.5	1.9	3 312.7

[a] Includes *fugitive fuel* emissions and *fuel combustion* emissions other than *transport*.
[b] Includes *solvent use* and *land-use change and forestry*.
[c] In accordance with decision 9/CP.2, some Parties with economies in transition use base years other than 1990: Bulgaria (1988); Hungary (average of 1985-1987); Poland (1988) and Romania (1989).
[d] Total emissions from fuel combustion are reported under *other energy* since emissions were not further disaggregated by the Party.

Table A.10. Anthropogenic N_2O emissions by source category, 1997 (Gigagrams and percentage of total by Party)

	Energy				Industrial		Agriculture		Waste				
	Transport		Other[a]								Other[b]		Total
	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)
Australia													
Austria	1.8	24.4	1.0	13.2	0.5	7.5	3.3	44.6	0.0	0.2	0.8	10.2	7.3
Belgium													
Bulgaria	0.1	0.5	9.6	45.3	6.9	32.8	4.5	21.4					21.2
Canada	29.0	13.8	9.0	4.3	34.0	16.2	130.0	61.9	3.2	1.5	5.0	2.4	210.0
Czech Republic	1.9	6.8	2.4	8.3	3.6	12.6	19.3	67.2	0.9	3.1	0.6	2.1	28.7
Denmark	1.3	3.9	1.6	4.9			29.8	89.7			0.5	1.5	33.2
Estonia	0.0	1.4	0.7	92.9			0.0	5.7					0.7
Finland[c]			7.5	39.7	2.6	13.8	8.8	46.6					18.9
France	9.0	3.0	9.3	3.1	80.6	26.8	177.9	59.3	3.5	1.2	20.0	6.6	300.3
Germany	22.0	10.2	20.0	9.3	80.0	37.0	84.0	38.9	4.0	1.9	6.0	2.8	216.0
Greece													
Hungary													
Iceland													
Ireland													
Italy													
Japan	14.7	22.3	9.1	13.9	28.1	42.8	6.5	9.9	6.0	9.1	1.3	2.0	65.7
Latvia	0.2	4.6	0.2	6.1			3.1	82.7	0.3	6.6	0.0	0.0	3.8
Liechtenstein													
Lithuania													
Luxembourg													
Monaco	0.0	38.7	0.0	35.1					0.0	26.2			0.0
Netherlands													

New Zealand	0.5	1.3	0.3	0.7			36.2	96.6	0.5	1.3	0.0	0.1	37.5
Norway	1.0	6.3	1.0	6.3	5.0	31.3	9.0	56.3					16.0
Poland	1.4	2.5	5.7	10.6	15.7	29.1	31.2	57.8			0.0	0.0	54.0
Portugal													
Romania													
Russian Federation													
Slovakia													
Slovenia													
Spain													
Sweden	2.0	8.3	5.0	20.8	2.0	8.3	16.0	66.7					24.0
Switzerland	1.9	16.4	0.2	2.0	0.3	2.6	8.5	72.6	0.3	2.6	0.4	3.3	11.7
Ukraine[b]			0.4	2.6	8.5	54.3	6.5	41.7	0.1	0.6	0.1	0.3	15.6
United Kingdom	11.8	6.1	11.5	6.0	69.4	36.1	98.9	51.5	0.5	0.3			192.0
United States of America	207.4	16.1	48.8	3.8	91.8	7.1	913.6	70.8	28.2	2.2			1 289.8

[a] Includes *fugitive fuel* emissions and *fuel combustion* emissions other than *transport*.
[b] Includes *solvent use* and *land-use change and forestry*.
[c] Total emissions from fuel combustion are reported under *other energy* since emissions were not further disaggregated by the Party.

Table A.11. Emissions of hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride[a], 1990, 1995, and 1997, and percentage change by Party (Gigagrams of CO_2 equivalent using IPCC 1995 GWP values with a time horizon of 100 years)

	HFCs			PFCs			SF_6			Total		
	1990	1995	1997	1990	1995	1997	1990	1995	1997	1990	1995	1997
Australia[b,c]				4 860	1 429	1 484			15	4 860	1 429	1 499
Austria[d,e]								846	655		846	655
Belgium[b,c,f]			533			73	333		333	333		939
Bulgaria												
Canada		500	500	6 000	6 000	6 000	2 900	1 900	1 400	8 900	8 400	7 900
Czech Republic			268			5			142			416
Denmark[d]									153			153
Estonia												
Finland[c,f]	200	200	380				100	100	120	300	300	500
France	2 230	1 611	3 876	3 039	1 314	1 608	2 486	2 342	2 247	7 755	5 267	7 731
Germany	2 340	2 986	3 200	2 694	1 734	1 480	3 896	6 238	5 688	8 930	10 958	10 368
Greece[b,f]	935	3253	3 746	503	385	385				1 438	3 638	4 131
Hungary												
Iceland[d]							5	5		5	5	
Ireland												
Italy	351	1 020		245	121		277	313		873	1455	
Japan[d]							38 240	52 580	52 580	38 240	52 580	50 190
Latvia												
Liechtenstein												
Lithuania												
Luxembourg												
Monaco[g]												
Netherlands	4 900	6 700	7 200	2 459	2 392	2 320	1 386	1 458	1 458	8 745	10 550	10 978
New Zealand[b,c,f]		251	533	603	197	217	24	24	24	626	472	773

Norway			26	87	2 546	1 441	1 446	2 199	574	502	4 745	2 041	2 035
Poland[e]													
Portugal													
Romania													
Russian Federation	9 665	9 665		31 630	28 938						41 295	38 603	
Slovakia[b]						320	320					320	320
Slovenia													
Spain													
Sweden[c]				1 501						1 601			3 102
Switzerland				355			61			173			589
Ukraine													
United Kingdom[d]								717	1 123	1 267	717	1 123	1 267
United States of America	35 833	48 490	68 921	18 003	9 999	11 354	26 744	36 663	36 663		80 580	95 152	116 937

[a] Estimates given in this table refer to actual emissions, except in cases where only potential emissions have been reported, as was the case for the Czech Republic, Finland and Japan. New Zealand also reported potential emissions, with the exception of some PFCs (emisssions from aluminium production). Iceland reported actual emissions for PFCs and SF_6, but potential emissions for HFCs. The Netherlands reported actual emissions for HFCs and PFCs, but potential emissions for SF_6. Sweden reported actual emissions for PFCs, but potential emissions for HFCs and SF_6. Austria and the Russian Federation did not indicate whether emissions were actual or potential.

[b] As the Party did not provide estimates of PFCs for 1997, estimates for 1996 are given in this table.

[c] As the Party did not provide estimates of SF_6 for 1997, estimates for 1996 are given in this table.

[d] Party did not report the exact chemical species of all these gases so it was not possible to calculate the emissions in terms of CO_2 equivalent (see tables A.12 and A.13).

[e] Estimates for 1998 rather than 1997 were provided by the Party, and are given in this table.

[f] As the Party did not provide estimates of HFCs for 1997, estimates for 1996 are given in this table.

[g] Party did not report estimates, but indicated that emissions were negligible.

Table A.12a. Emissions of hydrofluorocarbons, 1990, 1995 and 1997 (Megagrams)[a]

	Total HFC			HFC-23			HFC-32			HFC-125		
	1990	1995	1997	1990	1995	1997	1990	1995	1997	1990	1995	1997
Australia												
Austria[bc]		421.0	601.0									
Belgium[d]			370.0									10.1
Bulgaria												
Canada			3 197.7			0.6			0.1			181.2
Czech Republic[c]			208.5									
Denmark[c]			270.0									
Estonia												
Finland[cd]	100.0	110.0	170.0									
France	256.0	803.0	2 401.0	166.0	35.0	50.0				12.0	80.0	126.0
Germany[c]	200.0	2 030.0	2 708.0		0.0							
Greece[d]	78.0	274.0	3 20.0	78.0	274.0	320.0						
Hungary												
Iceland[c]		10.0										
Ireland												
Italy	30.0	629.6		30.0	0.0			7.9			60.2	
Japan[c]	1 600.0	11 100.0	13 500.0									
Latvia												
Liechtenstein												
Lithuania												
Luxembourg												
Monaco[c]												
Netherlands[d]	489.0	855.0	1 187.0	410.0	536.0	536.0	0.0	1.0	1.0	20.0	30.0	48.0
New Zealand		141.0	211.0					1.0	0.0		14.0	128.0

Norway	0.1	14.1	42.8		0.0	0.0		0.0	0.2	2.4	9.7
Poland[c]			148.0								
Portugal											
Romania											
Russian Federation	870.0	870.0		820.0	820.0						
Slovakia											
Slovenia											
Spain											
Sweden			1 005.8						14.8		64.5
Switzerland[c]			300.0								
Ukraine											
United Kingdom[c]	973.0	1 956.0	3 067.0								
United States of America	3 564.0	15 390.0	26 256.0	3 000.0	2 309.0	2 643.0				0.0	2 823.0	3 572.0

[a] Estimates given in this table refer to actual emissions, except in cases where only potential emissions were reported, as was the case for the Czech Republic, Finland, Iceland, Japan, New Zealand and Sweden.

[b] Estimates for 1998 rather than 1997 were provided by the Party, and are given in this table.

[c] Party only reported aggregate emissions of HFCs.

[d] 1996 data are given here as 1997 data were not reported.

[e] Party did not report estimates but indicated that emissions of HFCs were negligible.

Table A.12b. **Emissions of hydrofluorocarbons, 1990, 1995 and 1997 (Megagrams)[a]**

	HFC-134a			HFC-152a			HFC-143a			Other		
	1990	1995	1997	1990	1995	1997	1990	1995	1997	1990	1995	1997
Australia												
Austria[b]												
Belgium[c]			347.9						12.0			
Bulgaria												
Canada[d]			2 869.5			23.2			106.5			16.7
Czech Republic[b]												
Denmark[b]												
Estonia												
Finland[b]												
France[e]	0.0	648.0	2 202.0	12.0	5.0	3.0	67.0	35.0	20.0	0.0	0.0	1.0
Germany[b]												
Greece												
Hungary												
Iceland[b]												
Ireland												
Italy[e]		514.5						45.1			2.0	
Japan[b]												
Latvia												
Liechtenstein												
Lithuania												
Luxembourg												
Monaco[f]												
Netherlands[e,g]	30.0	250.0	549.0	25.0	24.0	24.0	4.0	13.0	29.0		23.0	56.0
New Zealand		104.0	55.0		3.0	1.0		20.0	27.0			

Norway[c]		10.2	25.9	0.1			1.5	6.8		0.0	0.1
Poland[b]											
Portugal											
Romania											
Russian Federation	56.0	50.0									
Slovakia											
Slovenia											
Spain											
Sweden			861.3		15.5			49.7			
Switzerland[b]											
Ukraine											
United Kingdom[b]											
United States of America[h]	564.0	9 553.0	17 960.0			0.0	94.0	427.0	0.0	611.0	1 654.0

[a] Estimates given in this table refer to actual emissions, except in cases where only potential emissions were reported, as was the case for New Zealand and Sweden.
[b] Party only reported aggregate emissions of HFCs (see table A.12a).
[c] 1996 data are given here as 1997 data were not reported.
[d] Emissions of HFC-236fa are given under *other*.
[e] Emissions of HFC-227ea are given under *other*.
[f] Party did not report estimates, but indicated that emissions of HFCs were negligible.
[g] Emissions reported as unspecified HFCs are given under *other*.
[h] Emissions of HFC-43-10mee for 1995 are given under *other*, as are emissions of HFC-43-10mee (1,479 Mg) and HFC-236fa (175 Mg) for 1997.

Table A.13. **Emissions of perfluorocarbons and sulphur hexafluoride, 1990, 1995 and 1997 (Megagrams)[a]**

	Total PFC			CF_4			C_2F_6			SF_6		
	1990	1995	1997	1990	1995	1997	1990	1995	1997	1990	1995	1997
Australia[b]	712.0	212.0	220.0	660.0	193.0	200.0	62.0	19.0	20.0			0.6
Austria[cd]		1.9	2.5								35.4	27.4
Belgium[be]			10.0							14.0		14.0
Bulgaria												
Canada												
Czech Republic[c]			0.7									6.0
Denmark[c]			1.0									6.4
Estonia												
Finland										4.0	4.0	5.0
France	433.0	186.0	222.0	309.0	104.0	135.0	69.0	24.0	52.0	104.0	98.0	94.0
Germany	397.0	253.0	209.0	355.0	220.0	164.0	42.0	33.0	45.0	163.0	261.0	238.0
Greece[bc]	74.6	57.1	57.1									
Hungary												
Iceland[c]	45.0	8.0								0.2	0.2	
Ireland												
Italy[i]	35.3	17.8		28.9	15.7		5.4	2.1		11.6	13.1	
Japan[c]	800.0	2 100.0	2 200.0							1 600.0	2 200.0	2 100.0
Latvia												
Liechtenstein												
Lithuania												
Luxembourg												
Monaco[g]												
Netherlands[bh]	363.0	353.0	343.0	310.0	300.0	300.0	31.0	30.0	30.0	58.0	61.0	61.0
New Zealand[i]	89.0	29.0	32.0	80.1	24.3	28.0	8.9	2.7	3.0	1.0	1.0	1.0
Norway[i]	385.0	218.0	219.1	369.0	209.0	211.0	16.0	9.0	8.0	92.0	24.0	21.0

Poland[c]			1.0									
Portugal												
Romania												
Russian Federation	4 700.0	4 200.0		4 300.0	3 900.0		430.0	390.0				
Slovakia[b]		48.7	48.7		47.5	47.5		1.2	1.2			
Slovenia												
Spain												
Sweden[c]	60.0		44.7							20.0		67.0
Switzerland[c]			9.0									7.2
Ukraine												
United Kingdom[c]	331.0	157.0	95.0							30.0	47.0	53.0
United States of America[j]	2 670.0	1 484.0	1 687.0	2 430.0	1 352.0	1 535.0	240.0	130.0	140.0	1 119.0	1 534.0	1 534.0

[a] Estimates given in this table refer to actual emissions, except in cases where only potential emissions were reported, as was the case for the Czech Republic, Finland and Japan. The Netherlands and Sweden reported actual emissions for PFCs, but potential emissions for SF_6.

[b] 1996 data are given here as 1997 data were not reported.

[c] Party only reported aggregate emissions of PFCs.

[d] Estimates for 1998 rather than 1997 were provided by the Party, and are given in this table.

[e] PFC emissions are emissions of C_2F_{14} (8 Mg) and C_3F_8 and C_2F_{14} (2 Mg).

[f] Total PFC emissions include emissions of C_3F_8 and C_4F_{10} (high boiling pyrolisis by-products).

[g] Party did not report estimates, but indicated emissions of PFCs and SF_6 were negligible.

[h] Total PFC emissions include unspecified PFC emissions not related to aluminium production.

[i] Total PFC emissions include emissions of C_3F_8.

[j] Total PFC emissions include emissions of C_2F_{14}.

Table A.14. Anthropogenic emissions of precursor gases and SO_2, 1990 and 1997 (Gigagrams)

	Precursor gases						SO_2	
	CO		NO_x		NMVOC			
	1990	1997	1990	1997	1990	1997	1990	1997
Australia	22 617		2 330		2 439			
Austria	1 286	1 011	194	171	350	253	91	57
Belgium	1 127		339		331			
Bulgaria[a]	827	617	486	143	132	71		1 304
Canada								
Czech Republic	1 055	899	742	422	311	274		70[a]
Denmark	785	569	280	250	179	148	180	110
Estonia	186	79	79	50	23	10		157
Finland								
France	10 903	8 129	1 951	1 730	3 003	2 505	1 312	842
Germany	11 219	6 374	2 709	1 803	3 225	1 807	5 321	1 468
Greece	1 338		343		373		509	
Hungary[a]	743		231		205			
Iceland	58		26		13		24	
Ireland	429		115		180			
Italy	7 894		1 945		2 221		1 650	
Japan	3 873	3 751	1 851	2 051	1 921	1 916	900	796
Latvia	388	354	93	44	148	82	119	44
Liechtenstein	2		1		2			
Lithuania	644	358	178	57	94	86		77
Luxembourg	175		23		20			
Monaco	3	3	1	1	1	1	0	0
Netherlands	1 139		563		500		193	
New Zealand	758	872	140	176	155	178	53	71
Norway	861	660	220	224	310	360	53	30

Poland[a]	7 400	4 700	1 450	1 114	1 290	775				
Portugal	984		339		258					
Romania[a]	2 421		554		529					
Russian Federation	8 140		3 040		5 990		9 440			
Slovakia	537		229		149		543			
Slovenia	174		64		37					
Spain	4 734		1 164		1 123		2 195			
Sweden	1 211	962	336	270	516	418	119	55		
Switzerland	707	459	163	123	281	185	42	27		
Ukraine	7 481		1 243		656					
United Kingdom	7 564	5 088	2 671	1 832	2 555	1 951	3 731	1 660		
United States of America	83 057	75 158	21 139	21 267	18 724	17 129	21 869	18 478		

[a] In accordance with decision 9/CP.2, some Parties with economies in transition use base years other than 1990: Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989).

Table A.15. Anthropogenic emissions of CO_2, CH_4 and N_2O from international bunkers, 1990 and 1997 (Gigagrams)

	CO_2 1990			CO_2 1997			CH_4 1990			CH_4 1997			N_2O 1990			N_2O 1997		
	Aviation	Marine	Total	Aviation	Marine	Total	Aviation	Marine	Total	Aviation	Marine	Total	Aviation	Marine	Total	Aviation	Marine	Total
Australia	4 345	2 056	6 401				0.0	0.7	0.7				0.1	0.1	0.2			
Austria	930		930	1 504		1 504							0.0		0.0	0.0		0.0
Belgium	2 370	13 356	15 726															
Bulgaria[a]			162		1 092	1 092												
Canada	2 860	2 070	4 920	2 450	1 520	3 970	0.1	0.1	0.1	0.1	0.0	0.1	0.3	0.3	0.6	1.1	0.8	1.9
Czech Republic				407		407				0.1		0.1						
Denmark			4 986	2 116	4 419	6 535				0.1	0.1	0.2					0.3	0.3
Estonia				312		312												
Finland			2 800			2 300			1.3			1.2			1.2			0.9
France	8 247	8 137	16 384	10 424	8 379	18 803								0.3	0.3		0.3	0.3
Germany	11 589	7 980	19 569	13 398	6 476	19 874	0.2	0.3	0.5	0.2	0.3	0.5	0.2	0.4	0.6	0.2	0.4	0.6
Greece	2 452	7 971	10 423				0.4	0.8	1.2				0.1	0.5	0.6			
Hungary[a]																		
Iceland			319															
Ireland			1 172															
Italy	3 737	8 467	12 204				0.3	0.8	1.1				0.1	0.5	0.6			
Japan	13 184	17 621	30 806	19 095	17 543	36 639	0.4	1.3	1.7	0.5	1.9	2.4		0.4	0.4		0.5	0.5
Latvia																		
Liechtenstein																		
Lithuania																		
Luxembourg			111															
Monaco																		
Netherlands	4 500	35 900	40 400															
New Zealand	1 353	1 031	2 384	1 724	1 112	2 836	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.1
Norway	605	1 478	2 083	752	3 080	3 832												
Poland[a]				346	1 882	2 228				0.0	0.2	0.2				0.0	0.1	0.1

Portugal	888	1 173	2 062				0.2	1.9	2.1				0.0	0.0	0.0			
Romania[a]																		
Russian Federation	2 900	9 500	12 400				0.0	0.6	0.7				0.1	0.1	0.2			
Slovakia[b]																		
Slovenia																		
Spain																		
Sweden	2 045	2 162	4 207	1 343	4 266	5 609				0.1							0.1	
Switzerland			2 160	2 600		2 600												
Ukraine																		
United Kingdom	14 791	6 559	21 349	22 198	8 064	30 262	2.9	0.6	3.5	3.8	0.7	4.5	0.5	0.4	0.9	0.7	0.5	1.2
United States of America	38 432	60 826	99 258	50 974	46 568	97 542	1.0	1.0	2.0	1.4	0.4	1.8	1.0	1.0	3.0	1.6	1.1	2.8

[a] In accordance with decision 9/CP.2, some Parties with economies in transition use base years other than 1990: Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989).
[b] The Party did not report estimates, but indicated that emissions were negligible.

Table A.16. **Anthropogenic emissions of CO and NO_x from international bunkers, 1990 and 1997 (Gigagrams)**

	CO 1990			CO 1997			NO_x 1990			NO_x 1997		
	Aviation	Marine	Total	Aviation	Marine	Total	Aviation	Marine	Total	Aviation	Marine	Total
Australia	7.0	1.9	9.0				23.2	54.7	77.9			
Austria	1.6		1.6	2.6		2.6	4.9		4.9	8.0		8.0
Belgium												
Bulgaria[a]			1.8		2.2	2.2			22.4		28.0	28.0
Canada												
Czech Republic				7.5		7.5				2.5		2.5
Denmark			9.0	1.1	10.3	11.4			85.0	8.9	121.0	129.9
Estonia												
Finland												
France	8.5	2.1	10.6	8.1	2.2	10.3	26.3	154.8	181.0	29.4	159.5	188.9
Germany	56.6	37.3	93.9	68.0	30.0	98.0	50.6	155.3	205.9	65.0	126.0	191.0
Greece	32.5	23.2	55.7				20.4	195.5	215.9			
Hungary[a]												
Iceland			0.8						3.2			
Ireland			2.2						5.4			
Italy	3.5	20.0	23.5				12.0	194.3	206.3			
Japan	22.4	33.6	56.0	32.4	48.6	81.1	54.1	335.9	390.0	78.4	486.4	564.8
Latvia												
Liechtenstein												
Lithuania												
Luxembourg			0.3						0.1			
Monaco												
Netherlands												
New Zealand	2.2	2.5	4.7	2.8	2.7	5.4	5.6	24.9	30.4	7.1	26.6	33.7
Norway	2.0	1.0	3.0	1.0	3.0		2.0	30.0	32.0	2.0	63.0	
Poland[a]												

Portugal	1.7	0.7	2.4				3.5	33.0	36.5			
Romania[a]												
Russian Federation												
Slovakia[b]												
Slovenia												
Spain												
Sweden	4.0	3.0	6.0	3 278.0	2.7	6.0	4.0	48.0	52.0	7 307.0	48.9	56.0
Switzerland												
Ukraine												
United Kingdom	60.1	15.5	75.6	83.5	19.1	102.6	72.8	119.6	192.4	110.5	147.1	257.6
United States of America	63.0	35.0	99.0	84.0	27.2	111.2	152.0	1 625.0	1 777.0	202.0	1 246.2	1 448.1

[a] In accordance with decision 9/CP.2, some Parties with economies in transition use base years other than 1990: Bulgaria (1988); Hungary (average of 1985-1987); Poland (1988) and Romania (1989).

[b] The Party did not report estimates, but indicated that emissions were negligible.

Table A.17. **Anthropogenic emissions of NMVOC and SO_2 from international bunkers, 1990 and 1997 (Gigagrams)**

	NMVOC 1990			NMVOC 1997			SO_2 1990			SO_2 1997		
	Aviation	Marine	Total	Aviation	Marine	Total	Aviation	Marine	Total	Aviation	Marine	Total
Australia	3.6	1.7	5.3									
Austria	0.6		0.6	1.0		1.0	0.3		0.3	0.5		0.5
Belgium												
Bulgaria[a]			0.3		0.4	0.4					15.8	15.8
Canada												
Czech Republic				2.9		2.9				0.3		0.3
Denmark			3.0	0.8	3.2	4.1				0.1	65.9	66.1
Estonia												
Finland												
France	2.9	70.8	73.7	2.4	73.0	75.4	2.6	150.8	153.4	3.3	141.5	144.8
Germany	9.3	15.2	24.5	11.0	12.0	23.0	3.9	126.3	130.2	4.0	102.0	106.0
Greece	5.8	5.7	11.4				0.8	154.6	155.4			
Hungary[a]												
Iceland			0.1						0.1			
Ireland			0.4									
Italy	2.5	5.7	8.2				1.2	131.2	132.4			
Japan	3.4	9.7	13.1	4.9	14.1	18.9						
Latvia												
Liechtenstein												
Lithuania												
Luxembourg			0.1									
Monaco												
Netherlands												
New Zealand	0.3	0.7	1.1	0.4	0.8	1.2	0.1	9.3	9.4	0.1	11.5	11.6
Norway	1.0	1.0	2.0		2.0			10.0	10.0		20.0	
Poland[a]												

Portugal	0.0	0.1	0.1									
Romania[a]												
Russian Federation												
Slovakia[b]												
Slovenia												
Spain												
Sweden	1.0	1.0	2.0	0.7		1.0		17.0	17.0	0.5	21.6	22.0
Switzerland												
Ukraine												
United Kingdom	36.9	4.4	41.3	51.0	5.5	56.4	2.8	92.5	95.3	7.0	116.9	123.9
United States of America	9.0	43.0	53.0	12.6	33.1	45.7						

[a] In accordance with decision 9/CP.2, some Parties with economies in transition use base years other than 1990. Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989).

[b] The Party did not report estimates, but indicated that emissions were negligible.

Table B.1. **Aggregate emissions of CO_2, CH_4 and N_2O,[a] 1990-1997, excluding land-use change and forestry (Gigagrams of CO_2 equivalent and percentage change)**

	1990	1991	1992	1993	1994	1995	1996	1997	Change 1990 to latest reported estimate (%)
Australia	410 796	412 213	414 365	417 629	421 148	434 042	444 341		8.2
Austria	73 727	77 971	72 040	71 158	72 798	74 155	75 665	77 571	5.2
Belgium	138 943	142 828	140 702	138 570	144 620	145 126	151 858		9.3
Bulgaria[b,c]	136 093	101 851	92 343	91 257	82 375	87 542		84 461	-37.9
Canada	590 550	583 660	601 860	608 060	625 270	643 370	663 670	674 680	14.2
Czech Republic[b]	189 837	175 323	161 221	154 710	147 291	148 103	153 579	157 816	-16.9
Denmark[b]	71 658	82 426	77 243	78 931	82 562	78 792	92 681	83 503	16.5
Estonia[b]	40 719	39 813	30 210	24 087	24 925	22 653	23 122	23 097	-43.3
Finland[b]	72 486		62 856	63 814	69 975	72 189	77 743	76 184	5.1
France	553 576	578 150	564 598	539 820	539 223	546 152	557 649	550 339	-0.6
Germany	1 201 117	1 149 679	1 094 172	1 073 215	1 055 410	1 053 824	1 063 405	1 035 804	-13.8
Greece	103 797	103 470	105 093	105 543	107 120	108 551	110 658		6.6
Hungary[b,c]	101 634	87 905	79 077	78 974	77 167	77 857	79 130		-22.1
Iceland	2 571	2 484	2 603	2 704	2 669	2 692			4.7
Ireland[b]	56 861	56 238	57 099	56 803	58 329	59 324	59 722		5.0
Italy	532 890				515 904	542 314			1.8
Japan	1 175 022	1 197 395	1 211 801	1 193 051	1 264 099	1 269 713	1 286 060	1 280 365	9.0
Latvia[b]	35 669	29 401	25 525	22 081	19 170	19 196	18 064	15 959	-55.3
Liechtenstein	260								
Lithuania[d]	51 548								
Luxembourg	13 448				12 674	10 223			-24.0
Monaco	111	128	136	139	142	139	145	147	33.0
Netherlands	208 307	214 711	212 506	214 233	215 384	223 832	232 071		11.4

New Zealand[b]	71 889	71 571	72 934	72 298	72 496	72 323	74 107	75 388	4.9
Norway	47 129	45 641	45 789	47 859	50 048	50 358	53 346	53 740	14.0
Poland[b,c]	564 286		439 045		438 895		436 545	426 220	-24.5
Portugal	68 442	70 450	74 429	71 621	72 579				6.0
Romania[c]	264 879	179 762	172 168	167 187	164 026				-38.1
Russian Federation	2 998 767				2 111 366				-29.6
Slovakia[b]	72 496	64 135	59 054	55 567	52 332	54 226	55 148		-23.9
Slovenia	19 212								
Spain	301 431	301 633	310 653	301 598	313 519	325 530			8.0
Sweden[b]	69 467	64 772	65 448	65 572	67 808	67 176	76 893	69 328	-0.2
Switzerland[b]	53 749	55 379	54 139	52 668	51 954	52 763	53 416	51 701	-3.8
Ukraine	919 220	784 111	765 090	678 301	572 045	538 833	499 634	466 471	-49.3
United Kingdom	726 642	727 481	704 090	678 982	675 182	664 067	683 663	657 435	-9.5
United States of America	5 902 990	5 860 810	5 948 186	6 056 871	6 187 669	6 246 110	6 439 211	6 513 874	10.3

[a] Aggregate emissions of CO_2, CH_4 and N_2O using IPCC 1995 global warming potentials. Does not include emissions of HFCs, PFCs and SF_6 as estimates for these gases were not reported by all Parties, for all years or in sufficient detail to convert estimates into CO_2 equivalents.

[b] The trend shown here may not be fully consistent since data for the entire period were not provided in the latest submission (see table 1 in section II of this document) and different sources of data were used.

[c] In accordance with decision 9/CP.2, some Parties with economies in transition use base years other than 1990: Bulgaria (1988), Hungary (average of 1985-1987); Poland (1988) and Romania (1989).

[d] Party reported only emissions of CO_2 and CH_4, not N_2O, for 1995-1997, so no aggregate emissions for these years are provided here.

Table B.2. **Aggregate emissions of CO_2, CH_4 and N_2O,[a] 1990-1997, including land-use change and forestry[b] (Gigagrams of CO_2 equivalent and percentage change)**

	1990	1991	1992	1993	1994	1995	1996	1997	Change 1990 to latest reported estimate (%)
Australia	469 669	462 965	461 345	462 301	459 309	471 186	480 601		2.3
Austria	60 427	62 671	54 147	53 383	58 072	60 578	61 912	63 818	5.6
Belgium	136 886	140 771	138 645	136 513	142 563	143 069	149 801		9.4
Bulgaria[cd]	131 436	93 971	84 707	84 235	75 401	80 022		78 609	-40.2
Canada	546 550	530 660	558 860	577 060	599 270	624 370	632 670	655 680	20.0
Czech Republic[d]	187 556	170 296	155 180	149 067	143 348	142 649	149 101	153 177	-18.3
Denmark[de]	70 734	81 494	76 303	77 983	81 606	77 828	91 700	82 506	16.6
Estonia[df]	29 402				13 800	9 387		31 090	
Finland[g]									
France	493 959	521 662	503 352	473 955	471 728	480 537	490 452	482 567	-2.3
Germany	1 167 398	1 115 960	1 060 453	1 039 496	1 021 691	1 020 331	1 029 912	1 002 311	-14.1
Greece[g]									
Hungary[cd]	98 537	84 666	75 255	74 276	72 347	73 060	75 199		-23.7
Iceland[g]									
Ireland[g]	51 701	50 848	51 519	51 043	52 359	53 094	53 225		2.9
Italy	507 941				491 073	517 569			1.9
Japan[f]	1 091 119	1 113 530	1 126 233	1 102 967	1 170 555	1 173 008			7.5
Latvia[g]	24 843	15 215	11 290	7 853	4 964	8 712	3 744	1 643	-93.4
Liechtenstein	238								
Lithuania[f]	42 700								
Luxembourg	13 153				12 379	9 928			-24.5
Monaco[g]									
Netherlands	206 807	213 111	210 906	212 633	213 684	222 132	230 371		11.4

New Zealand[d]	51 001	51 128	56 464	57 421	58 505	57 177	58 558	58 380	14.5
Norway	37 539	33 941	32 539	34 349	34 368	36 718	35 735	37 241	-0.8
Poland[e][d]	529 540		398 230		396 942		393 928	385 699	-27.2
Portugal	67 290	69 298	73 277	70 469	71 427				6.1
Romania[e]	261 954	173 172	165 578	160 597	157 436				-39.9
Russian Federation	2 606 767				1 543 366				-40.8
Slovakia[d]	68 239	59 878	54 797	51 310	47 214	49 110	49 867		-26.9
Slovenia	16 919								
Spain[g]									
Sweden	35 099						45 119	37 554	7.0
Switzerland[d]	49 389	50 999	49 709	47 508	46 804	47 663	48 216	46 301	-6.3
Ukraine	867 113	731 147	712 432	625 383	519 324	485 893	433 483	397 664	-54.1
United Kingdom	748 055	748 960	725 028	698 030	691 593	679 433	699 271	672 953	-10.0
United States of America	4 760 790	4 718 610	4 805 986	5 292 171	5 422 969	5 481 410	5 674 511	5 749 191	20.8

[a] Aggregate emissions of CO_2, CH_4 and N_2O using IPCC 1995 global warming potentials. Does not include emissions of HFCs, PFCs and SF_6 as estimates for these gases were not reported by all Parties, for all years or in sufficient detail to calculate emissions in terms of CO_2 equivalents.

[b] Estimates for *land-use change and forestry* are as reported in accordance with the present IPCC Guidelines for National Greenhouse Gas Inventories (see table B.7).

[c] In accordance with decision 9/CP.2, some Parties with economies in transition use base years other than 1990. Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989).

[d] The trend shown here may not be fully consistent since data for the entire period were not provided in the latest submission (see table 1 in section II of this document) and different sources of data were used.

[e] In its most recent inventories (1996 and 1997) the Party reported the CO_2 uptake by new forest planted since 31 December, 1990 and also reported the CO_2 uptake due to net increment in existing forest. For consistency with data given for 1990 to 1995, the latter are presented here.

[f] Party included CO_2 emissions from soil in its 1997 inventory while not for earlier years. As a result of inclusion of this category for 1997, net emissions from land-use change and forestry were reported, while net removals were reported for 1990-1996. For this reason the percentage change in the last column is not calculated.

[g] As the Party did not provide estimates from the *land-use change and forestry* sector, no estimates are given in this table.

[h] As the Party did not provide estimates from the *land-use change and forestry* sector for 1996 and 1997, no estimates for these years are shown here.

[i] Party reported only emissions of CO_2 and CH_4, not N_2O, for 1995-1997, so no aggregate emissions are provided here.

Table B.3. Total anthropogenic CO_2 emissions, excluding land-use change and forestry, 1990-1997 (Gigagrams and percentage change)

	1990	1991	1992	1993	1994	1995	1996	1997	Change 1990 to latest reported estimate (%)
Australia	275 344	277 009	279 528	282 916	286 904	298 301	308 413		12.0
Austria	62 042	66 440	60 531	59 535	61 068	62 427	64 026	66 062	6.5
Belgium	116 090	120 092	118 304	115 830	121 297	121 832	128 546		10.7
Bulgaria[ab]	96 878	66 141	60 164	62 412	59 540	62 227		59 148	-38.9
Canada	461 250	452 260	466 260	467 260	479 270	495 270	508 270	519 280	12.6
Czech Republic[a]	165 490	153 142	140 220	134 851	127 745	128 817	132 538	137 125	-17.1
Denmark[ac]	52 277	62 940	57 652	59 356	63 344	59 532	73 236	64 322	23.0
Estonia[a]	37 797	36 956	27 766	21 979	22 852	20 859	21 423	20 716	-45.2
Finland[a]	59 200		52 420	53 110	59 250	60 900	66 340	64 600	9.1
France	395 506	419 935	410 523	390 419	389 215	395 852	408 764	402 237	1.7
Germany	1 014 500	976 950	927 308	917 268	904 112	904 488	918 932	894 000	-11.9
Greece	85 349	85 031	86 963	87 422	88 721	90 306	91 978		7.8
Hungary[ab]	83 676	67 391	60 557	60 826	59 196	59 758	60 475		-27.7
Iceland	2 147	2 068	2 197	2 302	2 265	2 282			6.3
Ireland[a]	30 719	31 643	32 373	31 937	33 324	34 116	34 819		13.3
Italy	432 607				413 407	438 490			1.4
Japan	1 124 532	1 147 845	1 162 310	1 143 843	1 213 940	1 219 418	1 235 593	1 230 831	9.5
Latvia[a]	24 771	19 420	16 423	14 482	11 910	12 027	11 065	12 842	-48.2
Liechtenstein	208								
Lithuania[a]	39 535					15 200	16 200	16 200	-59.0
Luxembourg	12 750				11 998	9 545			-25.1
Monaco	108	125	133	135	138	135	141	143	32.3
Netherlands[c]	161 360	166 890	165 170	167 490	168 390	176 910	184 870		14.6
New Zealand[a]	25 241	25 791	27 720	27 048	27 096	27 033	29 008	30 284	20.0

Norway	35 202	33 609	34 251	35 906	37 948	38 195	41 141	41 430	17.7
Poland[a][c]	476 625		371 591		371 588		372 530	361 626	-24.1
Portugal	47 123	48 869	52 998	50 255	50 841				7.9
Romania[b]	194 826	135 660	130 160	127 086	125 597				-35.5
Russian Federation	2 372 300				1 660 000				-30.0
Slovakia[c]	60 032	52 755	48 725	46 415	43 454	45 360	46 105		-23.2
Slovenia	13 935								
Spain	226 423	227 515	234 945	226 197	237 446	247 703			9.4
Sweden[b]	55 443	55 200	56 000	56 000	58 500	58 108	63 352	56 428	1.8
Switzerland[a]	45 070	46 650	45 430	43 970	43 340	44 170	44 970	43 370	-3.8
Ukraine	703 792	586 478	577 916	504 222	406 838	380 928	346 768	322 907	-54.1
United Kingdom	584 171	588 003	573 613	559 627	556 152	547 887	566 785	540 643	-7.5
United States of America	4 928 900	4 875 600	4 948 500	5 057 100	5 146 100	5 203 400	5 387 500	5 455 553	10.7

[a] The trend shown here may not be fully consistent since data for the entire period were not provided in the latest submission (see table 1 in section II of this document) and different sources of data were used.

[b] In accordance with decision 9/CP.2, some Parties with economies in transition use base years other than 1990: Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989).

[c] Party also provided estimates adjusted for temperature correction, and in the case of Denmark also for electricity exchange, but non-adjusted estimates were included in this table for comparison and consistency purposes.

Table B.4. **CO_2 emissions from fuel combustion, 1990-1997 (Gigagrams and percentage change)**

	1990	1991	1992	1993	1994	1995	1996	1997	Change 1990 to latest reported estimate (%)
Australia	262 623	264 824	267 369	270 514	273 934	285 464	295 620		13.0
Austria	46 620	51 021	46 161	45 830	46 937	48 765	49 868	51 260	10.0
Belgium	105 919	109 504	107 586	105 102	109 748	109 936	116 069		10.0
Bulgaria[a,b]	90 327	60 626	55 416	57 650	54 322	56 225		53 458	-41.0
Canada	412 000	401 000	415 000	415 000	427 000	442 000	454 000	466 000	13.0
Czech Republic[a]	160 073	148 807	135 629	130 661	123 631	124 647	129 516	133 925	-16.0
Denmark[a,c]	50 898	61 136	55 711	57 472	61 117	57 748	71 406	62 148	22.0
Estonia[a]	37 184	36 342	27 453	21 786	22 668	20 638	21 216	20 362	-45.0
Finland[a]	53 900		51 400	52 250	58 340	55 900	61 300	59 600	11.0
France	364 315	390 325	382 530	363 046	360 700	367 417	381 449	374 539	3.0
Germany	986 852	952 136	901 919	892 006	877 158	878 100	894 000	869 000	-12.0
Greece	77 256	77 103	79 128	79 360	81 111	82 110	83 582		8.0
Hungary[a,b]	80 089	65 255	58 636	58 754	57 046	57 567	58 174		-27.0
Iceland	1 674	1 628	1 754	1 810	1 773	1 774			6.0
Ireland[a]	29 038	29 929	30 627	30 257	31 443	32 290	33 027		14.0
Italy	400 047				385 192	410 140			3.0
Japan	1 052 964	1 072 762	1 085 211	1 064 441	1 133 291	1 138 352	1 153 542	1 150 675	9.3
Latvia[a]	24 209	18 836	16 137	14 368	11 757	11 900	10 875	12 663	-48.0
Liechtenstein									
Lithuania[a]	37 332					14 800	15 800	15 800	-58.0
Luxembourg	12 133				11 520	9 109			-25.0
Monaco	106	122	130	132	135	131	138	139	31.0
Netherlands[c]	157 530	163 520	161 950	164 840	165 560	173 530	181 730		15.0
New Zealand[a]	22 240	22 580	24 406	23 648	23 745	23 670	25 594	26 967	21.0

Norway	26 403	25 738	26 426	27 466	28 814	28 518	31 245	31 570	20.0
Poland[a,b]	462 998		360 927		362 083		363 499	350 876	-24.0
Portugal	43 281	45 030	49 139	46 401	46 953				8.0
Romania[b]	185 575	130 465	125 498	122 644	121 327				-35.0
Russian Federation	2 298 900	2 123 000	1 948 000	1 805 000	1 601 100				-30.0
Slovakia[a]	56 585	50 038	45 616	43 584	40 389	42 270	43 104		-24.0
Slovenia	13 294								
Spain	207 592	208 926	217 904	210 079	219 730	229 675			11.0
Sweden[a]	51 328	51 100	51 600	51 600	53 900	53 385	59 391	52 712	3.0
Switzerland[a]	40 330	42 210	41 280	40 010	39 200	40 130	41 300	39 700	-2.0
Ukraine	672 075	557 747	549 439	484 956	390 118	365 333	331 976	307 091	-54.3
United Kingdom	558 091	566 587	553 032	539 196	532 806	526 496	545 036	520 944	-7.0
United States of America	4 866 000	4 812 700	4 885 400	4 988 800	5 074 400	5 125 000	5 308 400	5 375 164	10.0

[a] The trend shown here may not be fully consistent since data for the entire period were not provided in the latest submission (see table 1 in section II of this document) and different sources of data were used

[b] In accordance with decision 9/CP.2, some Parties with economies in transition use base years other than 1990: Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989).

[c] Party also provided estimates adjusted for temperature correction, and in the case of Denmark also for electricity exchange, but non-adjusted estimates were included in this table for comparison and consistency purposes.

Table B.5. **CO_2 emissions from transport, 1990-1997 (Gigagrams and percentage change)**

	1990	1991	1992	1993	1994	1995	1996	1997	Change 1990 to latest reported estimate (%)
Australia	59 596	58 944	60 397	61 120	62 689	65 185	67 240		12.8
Austria	13 569	15 058	15 053	15 103	16 127	15 431	15 357	15 805	16.5
Belgium	19 964	19 921	20 911	21 238	21 877	21 834	22 389		12.1
Bulgaria[ab]	10 753	6 845	7 000	8 183	7 179	7 394		5 674	-47.2
Canada	147 000	142 000	145 000	149 000	157 000	162 000	167 000	174 000	18.4
Czech Republic[a]	7 959	6 869	8 143	8 314	8 260	8 912	9 896	11 392	43.1
Denmark[a]	10 474	10 946	11 072	11 301	11 345	11 370	11 748	12 070	15.2
Estonia[a]	2 656	2 385	1 432	1 607	1 786	1 700	1 534	1 097	-58.7
Finland[a]	11 900		11 590	10 990	11 410	11 100	11 000		-7.6
France	122 566	125 153	128 302	128 727	132 106	134 384	135 592	138 144	12.7
Germany	162 281	165 953	171 661	176 132	172 899	175 000	174 000	175 000	7.8
Greece	15 170	15 998	16 423	16 638	16 728	16 850	17 253		13.7
Hungary[ab]	7 741	7 383	7 189	7 141	7 212	7 001	6 612		-14.6
Iceland	721	727	729	738	743	749			3.9
Ireland[a]	4 885	5 124	5 556	5 543	5 811	6 198	6 538		33.8
Italy	95 521				103 742	109 867			15.0
Japan	205 633	215 313	220 473	222 474	233 425	240 292	246 874	251 376	22.2
Latvia[a]	5 829	3 167	2 836	2 577	2 229	1 749	1 612	2 178	-62.6
Liechtenstein									
Lithuania[a]	5 791					3 500	3 800	4 100	-29.2
Luxembourg	2 625				3 685	3 426			30.5
Monaco	39	46	51	47	49	47	47	47	18.1
Netherlands	28 560	28 550	29 830	30 460	30 800	31 860	33 370		16.8

New Zealand[a]	8 645	8 662	9 048	9 459	10 161	10 869	10 972	11 242	30.0
Norway	13 533	13 306	13 511	13 948	13 935	14 274	14 964	15 296	13.0
Poland[a,b]	28 238		30 475		29 533		28 098	26 662	-5.6
Portugal	14 060	14 937	16 056	16 318	16 849				19.8
Romania[b]	7 893	7 521	6 834	7 498	7 744				-1.9
Russian Federation									
Slovakia[a]	5 168	4 426	4 116	4 029	4 189	4 216	4 164		-19.4
Slovenia	3 179								
Spain	58 260	59 154	60 687	60 681	61 625	64 268			10.3
Sweden[a]	18 650	18 700	19 200	18 400	18 800	19 341	19 573	19 547	4.8
Switzerland[a]	14 668	15 238	14 641	14 623	14 865	14 580	14 910	15 280	4.2
Ukraine									
United Kingdom	116 721	116 194	117 647	118 822	119 175	118 066	122 679	123 756	6.0
United States of America	1 482 400	1 452 000	1 472 800	1 489 100	1 545 100	1 577 000	1 630 500	1 634 556	10.3

[a] The trend shown here may not be fully consistent since data for the entire period were not provided in the latest submission (see table 1 in section II of this document) and different sources of data were used.

[b] In accordance with decision 9/CP.2, some Parties with economies in transition use base years other than 1990. Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989).

Table B.6. **CO_2 emissions from industrial processes, 1990-1997 (Gigagrams and percentage change)**

	1990	1991	1992	1993	1994	1995	1996	1997	Change 1990 to latest reported estimate (%)
Australia	6 655	6 330	6 212	6 459	7 293	7 018	7 110		6.8
Austria	12 703	12 644	11 468	10 882	11 196	10 780	10 938	11 635	-8.4
Belgium	9 188	9 546	9 665	9 706	10 456	10 706	11 287		22.8
Bulgaria[a][b]	5 890	4 751	4 023	4 103	4 812	5 602		5 369	-8.8
Canada	32 000	34 000	34 000	36 000	36 000	37 000	39 000	38 000	18.8
Czech Republic[a]	5 417	4 335	4 591	4 190	4 114	4 170	2 479	2 498	-53.9
Denmark[a]	1 006	1 178	1 300	1 311	1 318	1 311	1 388	1 539	53.0
Estonia[a]	613	614	313	193	215	222	206	354	-42.3
Finland[a]	1 200		1 020	860	840	800	840	900	-25.0
France	21 211	19 379	17 904	17 150	18 204	18 685	17 429	17 543	-17.3
Germany	27 668	24 814	25 389	25 262	26 954	26 388	24 932	25 000	-9.6
Greece	7 804	7 634	7 543	7 784	7 325	7 912	8 111		3.9
Hungary[a][c]	3 587	1 382	1 168	1 318	1 397	1 438	1 548		-56.9
Iceland	391	357	361	408	409	425			8.8
Ireland[a]	1 627	1 660	1 692	1 626	1 827	1 772	1 738		6.8
Italy	27 520				22 852	22 985			-16.5
Japan	58 795	60 381	60 998	60 333	61 303	61 236	61 079	59 501	1.2
Latvia[a]	563	584	286	113	154	127	185	179	-68.1
Liechtenstein									
Lithuania[a]	2 203					400	400	400	-81.8
Luxembourg	585				447	406			-30.6
Monaco									
Netherlands	1 880	1 530	1 260	1 210	1 430	1 750	1 740		-7.4

New Zealand[a]	2 386	2 510	2 647	2 770	2 671	2 736	2 742	2 626	10.1
Norway	6 718	6 245	6 150	6 656	7 216	7 654	7 684	7 750	15.4
Poland[4b]	13 574		10 603		9 422		8 938	10 664	-21.4
Portugal	3 421	3 421	3 421	3 421	3 421				0.0
Romania[5]	9 244	5 188	4 655	4 435	4 263				-53.9
Russian Federation	46 300	43 603	35 702	29 802	24 000	23 100			-50.1
Slovakia[6]	3 447	2 717	3 109	2 831	3 065	3 090	3 001		-12.9
Slovenia	641								
Spain	17 690	17 408	15 830	14 789	16 469	17 278			-2.3
Sweden[a]	3 786	3 700	4 100	4 000	4 200	4 458	3 711	3 716	-1.8
Switzerland[a]	3 363	3 030	2 740	2 550	2 730	2 620	2 200	2 200	-34.6
Ukraine	31 717	28 731	28 477	19 266	16 720	15 595	14 792	15 816	-50.1
United Kingdom	13 939	11 613	11 015	11 148	12 147	12 000	12 621	11 839	-15.1
United States of America	54 500	53 300	53 700	55 300	58 600	62 000	63 400	65 155	19.5

[a] The trend shown here may not be fully consistent since data for the entire period were not provided in the latest submission (see table 1 in section II of this document) and different sources of data were used.

[b] In accordance with decision 9/CP.2, some Parties with economies in transition use base years other than 1990: Bulgaria (1988); Hungary (average of 1985-1987); Poland (1988) and Romania (1989).

Table B.7. **Anthropogenic CO_2 emissions and removals from land-use change and forestry,[a] 1990-1997 (Gigagrams and percentage change by Party)**

	1990	1991	1992	1993	1994	1995	1996	1997	Change 1990 to latest reported estimate (%)
Australia	58 873	50 752	46 980	44 672	38 161	37 144	36 260		-38.4
Austria	- 13 300	- 15 301	- 17 893	- 17 775	- 14 726	- 13 576	- 13 753	- 13 753	3.4
Belgium	- 2 057	- 2 057	- 2 057	- 2 057	- 2 057	- 2 057	- 2 057		
Bulgaria[b,c]	- 4 657	- 7 880	- 7 636	- 7 022	- 6 974	- 7 520		- 5 852	25.7
Canada	- 44 000	- 53 000	- 43 000	- 31 000	- 26 000	- 19 000	- 31 000	- 19 000	-56.8
Czech Republic[b]	- 2 281	- 5 027	- 6 041	- 5 643	- 3 943	- 5 454	- 4 479	- 4 639	103.4
Denmark[d]	- 924	- 932	- 940	- 948	- 956	- 964	- 981	-997	7.9
Estonia[e]	- 11 317				- 11 125	- 13 266		7 993	
Finland[f]									
France	- 59 617	- 56 488	- 61 246	- 65 865	- 67 495	- 65 615	- 67 197	- 67 772	13.7
Germany	- 33 719	- 33 719	- 33 719	- 33 719	- 33 719	- 33 493	- 33 493	- 33 493	-0.7
Greece									
Hungary[b,c]	- 3 097	- 3 239	- 3 823	- 4 697	- 4 820	- 4 797	- 3 931		26.9
Iceland									
Ireland[b]	- 5 160	- 5 390	- 5 580	- 5 760	- 5 970	- 6 230	- 6 497		25.9
Italy	- 24 949				- 24 831	- 24 745			-0.8
Japan	- 83 903	- 83 865	- 85 568	- 90 084	- 93 545	- 96 705			15.3
Latvia[b]	- 10 826	- 14 186	- 14 235	- 14 228	- 14 206	- 10 484	- 14 320	- 14 315	32.2
Liechtenstein	-22								
Lithuania[b]	- 8 848					2 800	2 800	2 800	-131.6
Luxembourg	- 295				- 295	- 295			
Monaco									
Netherlands	- 1 500	- 1 600	- 1 600	- 1 600	- 1 700	- 1 700	- 1 700		13.3

New Zealand	- 20 888	- 19 443	- 16 469	- 14 877	- 13 991	- 15 145	- 15 549	- 17 008	-18.6
Norway	- 9 590	- 11 700	- 13 250	- 13 510	- 15 680	- 13 640	- 17 611	- 16 499	72.0
Poland[b,c]	- 34 746		- 40 815		- 41 953		- 42 617	- 40 521	16.6
Portugal	- 1 152	- 1 152	- 1 152	- 1 152	- 1 152				
Romania[c]	- 2 925	- 6 590	- 6 590	- 6 590	- 6 590				125.3
Russian Federation	-392 000				- 568 000	- 585 000			49.2
Slovakia[b]	- 4 257	- 4 257	- 4 257	- 4 257	- 5 118	- 5 116	- 5 281		24.1
Slovenia	- 2 293								
Spain									
Sweden	- 34 368						- 31 774	- 31 774	-7.5
Switzerland[b]	- 4 360	- 4 380	- 4 430	- 5 160	- 5 150	- 5 100	- 5 200	- 5 400	23.9
Ukraine	- 52 107	- 52 964	- 52 658	- 52 917	- 52 721	- 52 940	- 66 151	- 68 806	32.0
United Kingdom[g]	21 413	21 479	20 938	19 048	16 410	15 366	15 609	15 518	-27.5
United States of America	-1 142 200	-1 142 200	-1 142 200	- 764 700	- 764 700	- 764 700	- 764 700	- 764 683	-33.1

a Estimates for *land-use change and forestry* are as reported in accordance with the present IPCC Guidelines for National Greenhouse Gas Inventories. In this table negative values in gigagrams indicate net removal of CO_2 from the *land-use change and forestry* sector; negative values in percentage represent a decrease in removals in relation to the year 1990 and positive values indicate an increase in removals, except for Australia and the United Kingdom where the negative values in percentage change indicate less emissions or greater removals.

b The trend shown here may not be fully consistent since data for the entire period were not provided in the latest submission (see table 1 in section II of this document) and different sources of data were used.

c In accordance with decision 9/CP.2, some Parties with economies in transition use base years other than 1990. Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989).

d In its most recent inventories (1996 and 1997) the Party reported the CO_2 uptake by new forest planted since 31 December 1990 (24 Gg and 30 Gg in 1996 and 1997, respectively) and also reported the CO_2 uptake due to net increment in existing forest. For consistency with data given for 1990 to 1995, the latter are presented here.

e Party included CO_2 emissions from soil in its 1997 inventory while not for earlier years. As a result of inclusion of this category for 1997 net emissions from land-use change and forestry were reported, while net removals were reported for the years 1990 to 1996. For this reason the percentage change in the last column is not calculated.

f Although the Party did not include any estimates from the *land-use change and forestry* sector in its national inventory, it stated in the national communication that the annual carbon sink from stem wood has been between 12,500 and 37,500 Gg.

g The estimates include CO_2 emissions from upland and lowland drainage, and peat extraction, and removals by salt marshes.

Table B.8. Total anthropogenic CH_4 emissions, 1990-1997 (Gigagrams and percentage change)

	1990	1991	1992	1993	1994	1995	1996	1997	Change 1990 to latest reported estimate (%)
Australia	5 345	5 322	5 305	5 274	5 251	5 292	5 308		-0.7
Austria	460	448	446	449	451	450	447	440	-4.3
Belgium	634	628	625	633	635	594	591		-6.8
Bulgaria[a][b]	1 413	1 358	1 250	1 117	826	901		892	-36.8
Canada	3 500	3 600	3 800	3 900	4 000	4 100	4 300	4 300	22.9
Czech Republic[a]	779	711	668	633	613	600	573	562	-27.8
Denmark[a]	421	426	431	445	428	430	425	423	0.6
Estonia[a]	105	102	91	80	80	68	63	103	-2.0
Finland[a]	358		246	244	245	269	270	273	-23.9
France	3 023	3 025	2 987	2 972	2 905	2 846	2 719	2 619	-13.4
Germany	5 571	5 013	4 654	4 267	4 022	3 902	3 573	3 564	-36.0
Greece	437	438	438	441	450	454	457		4.6
Hungary[a][b]	664	914	808	792	776	789	813		22.4
Iceland	14	14	14	14	14	14			-2.9
Ireland[a]	811	798	802	805	807	814	800		-1.4
Italy	2 349				2 513	2 556			8.8
Japan	1 543	1 523	1 513	1 505	1 489	1 477	1 447	1 389	-10.0
Latvia[a]	186	183	150	105	98	101	93	93	-50.3
Liechtenstein	1								
Lithuania[a]	378					299	285	302	-20.1
Luxembourg	24				22	22			-7.4
Monaco[c]	0	0	0	0	0	0	0	0	19.2
Netherlands	1 292	1 309	1 256	1 225	1 203	1 173	1 179		-8.8

New Zealand[a]	1 674	1 638	1 611	1 607	1 608	1 602	1 594	1 594	-4.7
Norway	317	322	328	333	340	343	345	350	10.4
Poland[a,b]	3 141		2 474		2 467		2 252	2 279	-27.5
Portugal	809	820	814	812	827				2.3
Romania[b]	2 357	1 734	1 603	1 523	1 461				-38.0
Russian Federation	26 500				19 610				-26.0
Slovakia[a]	409	381	359	331	315	310	314		-23.2
Slovenia	176								
Spain	2 181	2 162	2 254	2 305	2 331	2 370			8.7
Sweden[a]	284	320	320	320	303	296	261	260	-8.5
Switzerland[a]	244	244	242	240	236	235	228	224	-8.0
Ukraine	9 402	8 654	8 348	7 932	7 570	7 295	7 059	6 606	-29.7
United Kingdom	3 637	3 587	3 493	3 139	2 903	2 875	2 813	2 727	-25.0
United States of America	29 660	29 850	30 126	30 071	30 659	31 230	31 201	31 357	5.7

[a] The trend shown here may not be fully consistent since data for the entire period were not provided in the latest submission (see table 1 in section II of this document) and different sources of data were used.

[b] In accordance with decision 9/CP.2, some Parties with economies in transition use base years other than 1990: Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989).

[c] Estimates given here are rounded. Actual estimates rounded to the nearest thousandth are: 1990: 0.052; 1991: 0.056; 1992: 0.059; 1993: 0.060; 1994: 0.061; 1995: 0.059; 1996: 0.060; 1997: 0.062.

Table B.9. **CH_4 fugitive fuel emissions, 1990-1997 (Gigagrams and percentage change)**

	1990	1991	1992	1993	1994	1995	1996	1997	Change 1990 to latest reported estimate (%)
Australia	1 108	1 086	1 132	1 089	1 097	1 130	1 143		3.2
Austria	4	5	4	5	5	5	6	5	25.8
Belgium	53	50	44	44	45	34	34		-36.6
Bulgaria[ab]	315	258	241	232	225	265		229	-27.4
Canada	1 300	1 400	1 500	1 600	1 700	1 800	1 900	1 900	46.2
Czech Republic[a]	394	356	342	333	317	315	301	298	-24.3
Denmark[a]	12	14	14	14	17	17	17	18	48.4
Estonia								32	
Finland[a]	1					1	2	1	16.7
France	311	304	307	314	310	310	263	231	-25.8
Germany	1 561	1 472	1 463	1 349	1 219	1 194	1 103	1 155	-26.0
Greece	44	45	47	47	48	49	51		15.2
Hungary[ab]	448	453	383	385	379	398	425		-5.2
Iceland									
Ireland[a]	10	10	10	11	11	11	12		19.9
Italy	309				352	352			14.0
Japan	166	171	174	173	169	167	169	138	-17.2
Latvia[a]	53	51	36	25	18	22	19	9	-83.3
Liechtenstein									
Lithuania[a]	26								
Luxembourg	2				2	2			7.5
Monaco									
Netherlands	179	188	163	158	169	174	192		7.2

New Zealand[a]	25	22	22	22	23	27	31	33	33 3
Norway	20	21	25	27	29	29	28	33	65 0
Poland[ab]	1 248		793		896		943	937	-24 9
Portugal	4	4	4	4	3				-20 6
Romania[b]	1 416	975	917	897	847				-40 2
Russian Federation	18 900				13 300				-29 6
Slovakia[a]	122	114	102	106	105	114	119		-2 5
Slovenia	51								
Spain	687	647	665	653	621	629			-8 5
Sweden									
Switzerland[a]	15	14	14	14	13	13	13	13	-14 1
Ukraine	6 220	5 541	5 315	5 014	4 727	4 624	4 562	4 318	-30 6
United Kingdom	1 329	1 330	1 293	994	801	831	796	768	-42 2
United States of America	10 172	10 073	9 972	9 572	9 472	9 671	9 471	9 392	-7 7

[a] The trend shown here may not be fully consistent since data for the entire period were not provided in the latest submission (see table 1 in section II of this document) and different sources of data were used.

[b] In accordance with decision 9/CP.2, some Parties with economies in transition use base years other than 1990: Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989).

Table B.10. CH_4 emissions from agriculture, 1990-1997 (Gigagrams and percentage change)

	1990	1991	1992	1993	1994	1995	1996	1997	Change 1990 to latest reported estimate (%)
Australia	3 200	3 206	3 136	3 131	3 104	3 105	3 096		-3.2
Austria	208	200	202	204	209	208	206	202	-2.9
Belgium	388	384	383	388	389	357	354		-8.7
Bulgaria[a]	307	240	197	154	130	125		113	-63.1
Canada	950	960	950	990	1 000	1 100	1 100	1 100	15.8
Czech Republic[a]	204	186	169	148	139	139	134	129	-36.8
Denmark[a]	329	330	335	348	326	327	321	322	-2.0
Estonia[a]	60	60	55	47	46	34	30	35	-41.7
Finland[a]	94	97	94	93	93	82	82	83	-11.4
France	1 631	1 604	1 570	1 557	1 555	1 564	1 565	1 547	-5.1
Germany	1 902	1 679	1 599	1 572	1 570	1 559	1 553	1 547	-18.7
Greece	271	270	268	270	276	279	280		3.3
Hungary[a]	208	168	144	127	121	115	113		-45.6
Iceland	12	12	11	11	11	11			-6.7
Ireland	640	625	629	632	633	637	655		2.3
Italy	909				871	872			-4.1
Japan	862	845	849	855	848	831	810	789	-6.3
Latvia	101	107	89	55	46	45	42	44	-60.4
Liechtenstein									
Lithuania	85					95	89	58	-31.3
Luxembourg	18				17	17			-4.1
Monaco									
Netherlands	525	517	505	497	483	476	476		-9.7

Table B.11. CH_4 emissions from waste, 1990-1997 (Gigagrams and percentage change)

	1990	1991	1992	1993	1994	1995	1996	1997	Change 1990 to latest reported estimate (%)
Australia	704	720	736	751	767	778	794		12.7
Austria	227	226	224	223	221	220	218	217	-4.6
Belgium	174	177	181	183	184	186	186		6.8
Bulgaria[ab]	732	852	806	723	463	503		542	-26.0
Canada	900	930	950	970	980	990	990	1 000	11.1
Czech Republic[a]	105	105	104	100	101	101	97	97	-7.3
Denmark[a]	71	71	72	72	74	74	73	70	-1.1
Estonia[a]	42	39	35	31	31	32	31	33	-21.1
Finland[a]	240	128	132	134	132	160	160	160	-33.3
France	819	826	828	820	778	707	612	580	-29.2
Germany	1 894	1 695	1 453	1 216	1 114	1 029	792	740	-60.9
Greece	109	110	111	111	112	112	113		3.2
Hungary[ab]		257	256	256	255	255	254		
Iceland	2	2	2	2	2	2			21.1
Ireland[a]	136	136	136	136	136	136	102		-25.0
Italy	843				987	1 029			22.1
Japan	394	383	376	371	370	374	369	364	-7.7
Latvia[a]	19	23	23	24	25	26	26	28	41.9
Liechtenstein									
Lithuania[a]	166					139	130	145	-12.5
Luxembourg	4				3	3			-28.5
Monaco[c]	0	0	0	0	0	0	0	0	3.7
Netherlands	568	562	546	528	510	481	466		-18.1

New Zealand[c]	141	143	138	135	129	120	114	129	-8.9
Norway	182	185	184	188	190	191	194	194	6.6
Poland[a,b]	966		941		855		652	677	-29.9
Portugal	578	587	596	605	613				6.1
Romania[b]	241	229	227	227	228				-5.4
Russian Federation	1 940	1 950	1 950	1 950	1 950	1 930			-0.5
Slovakia[a]	65	69	77	70	65	63	69		6.2
Slovenia	76								
Spain	491	508	572	634	683	719			46.3
Sweden[c]	85	85	85	85	61	61	61	61	-28.2
Switzerland[c]	69	68	68	67	67	67	66	65	-6.0
Ukraine	892	890	891	892	889	881	873	859	-3.7
United Kingdom	1 150	1 111	1 066	1 018	981	946	906	861	-25.2
United States of America	10 000	10 200	10 300	10 600	11 000	11 300	11 600	11 808	18.1

[a] The trend shown here may not be fully consistent since data for the entire period were not provided in the latest submission (see table 1 in section II of this document) and different sources of data were used.
[b] In accordance with decision 9/CP.2, some Parties with economies in transition use base years other than 1990: Bulgaria (1988); Hungary (average of 1985-1987); Poland (1988) and Romania (1989).
[c] Estimates given here are rounded. Actual estimates rounded to the nearest thousandth are: 1990: 0.023; 1991: 0.023; 1992: 0.023; 1993: 0.024; 1994: 0.023; 1995: 0.023; 1996: 0.023; 1997: 0.023.

Table B.12. Total anthropogenic N_2O emissions, 1990-1997 (Gigagrams and percentage change)

	1990	1991	1992	1993	1994	1995	1996	1997	Change 1990 to latest reported estimate (%)
Australia	74.9	75.6	75.6	77.3	77.3	79.4	78.9		5.4
Austria	6.5	6.8	6.9	7.1	7.3	7.3	7.3	7.3	12.0
Belgium	30.8	30.8	29.9	30.5	32.2	34.9	35.2		14.4
Bulgaria[ab]	30.8	23.2	19.1	17.4	17.7	20.6		21.2	-31.2
Canada	180.0	180.0	180.0	190.0	200.0	200.0	210.0	210.0	16.7
Czech Republic[a]	25.8	23.4	22.5	21.2	21.5	21.6	29.1	28.7	11.1
Denmark[a]	34.0	34.0	34.0	33.0	33.0	33.0	33.9	33.2	-2.4
Estonia[a]	2.3	2.3	1.7	1.4	1.3	1.2	1.2	0.7	-69.6
Finland[a]	18.6		17.0	18.0	18.0	18.2	18.5	18.9	1.6
France	305.1	305.4	294.7	280.6	287.1	292.0	296.1	300.3	-1.6
Germany	224.6	217.6	223.0	214.0	215.6	217.4	224.0	216.0	-3.8
Greece	29.9	29.8	28.8	28.6	28.9	28.1	29.3		-2.0
Hungary[ab]	12.9	4.2	5.0	4.9	5.4	4.9	5.1		-60.5
Iceland	0.4	0.4	0.4	0.4	0.4	0.4			-4.8
Ireland[a]	29.4	25.3	25.4	25.7	26.0	26.2	26.2		-10.9
Italy	164.4				160.4	161.8			-1.6
Japan	58.4	56.7	57.2	56.8	60.9	62.2	64.8	65.7	12.6
Latvia[a]	22.5	19.8	19.2	17.4	16.8	16.3	16.3	3.8	-83.2
Liechtenstein	0.1								
Lithuania	13.2								
Luxembourg	0.6				0.7	0.7			8.5
Monaco[c]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	95.3
Netherlands	63.9	65.6	67.6	67.8	70.1	71.9	72.4		13.3

New Zealand[a]	37.1	36.7	36.7	37.1	37.5	37.6	37.5	37.5	1.0
Norway	17.0	17.0	15.0	16.0	16.0	16.0	16.0	16.0	-5.9
Poland[a,c]	70.0		50.0		50.0		53.9	54.0	-22.8
Portugal	14.0	14.1	14.0	13.9	14.1				0.7
Romania[b]	66.3	24.8	26.9	26.2	25.0				-62.3
Russian Federation	225.7				127.6				-43.5
Slovakia[a]	12.5	10.9	9.0	7.1	7.3	7.6	7.9		-36.8
Slovenia	5.1								
Spain	94.2	92.6	91.5	87.1	87.5	90.5			-4.0
Sweden[a]	26.0	9.2	8.8	9.2	9.5	9.2	26.0	24.0	-7.7
Switzerland[a]	11.5	11.6	11.7	11.8	11.8	11.8	11.8	11.7	1.7
Ukraine	58.0	51.3	38.3	24.2	20.1	15.2	14.9	15.6	-73.1
United Kingdom	213.2	206.9	184.3	172.4	187.3	180.0	186.5	192.0	-9.9
United States of America	1 133.0	1 156.0	1 184.0	1 188.0	1 283.0	1 246.0	1 279.0	1 289.8	13.8

[a] The trend shown here may not be fully consistent since data for the entire period were not provided in the latest submission (see table 1 in section II of this document) and different sources of data were used.

[b] In accordance with decision 9/CP.2, some Parties with economies in transition use base years other than 1990: Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989).

[c] Estimates given here are rounded. Actual estimates rounded to the nearest thousandth are: 1990: 0.005; 1991: 0.006; 1992: 0.006; 1993: 0.007; 1994: 0.008; 1995: 0.008; 1996: 0.009; 1997: 0.009.

Table B.13. **N_2O emissions from fuel combustion, 1990-1997 (Gigagrams and percentage change)**

	1990	1991	1992	1993	1994	1995	1996	1997	Change 1990 to latest reported estimate (%)
Australia	7.7	8.5	9.6	10.7	11.6	12.6	13.4		73.4
Austria	1.9	2.1	2.2	2.4	2.7	2.7	2.7	2.8	46.1
Belgium	7.7	8.1	8.2	8.2	8.4	8.0	7.9		2.2
Bulgaria[a,b]	7.0	10.2	9.8	9.7	9.4	9.7		9.7	39.6
Canada	29.0	29.0	31.0	33.0	36.0	37.0	37.0	38.0	31.0
Czech Republic[a]	20.0	18.5	17.1	16.6	16.6	16.4	4.2	4.3	-78.4
Denmark[a]	2.0	2.0	2.0	2.0	3.0	3.0	3.1	2.9	45.5
Estonia[a]	1.4	1.4	1.0	0.9	0.8	0.8	0.8	0.7	-53.4
Finland[a]	5.5		6.0	6.0	6.0	6.3	6.9	7.5	36.4
France	12.8	14.3	14.5	14.4	15.2	16.2	17.8	18.3	43.2
Germany	36.6	37.6	37.0	38.0	38.6	40.2	42.0	42.0	14.8
Greece	6.7	7.2	7.1	7.1	7.1	7.4	7.8		16.4
Hungary[a,b]	8.4	2.6	3.3	3.4	3.6	3.3	3.4		-59.1
Iceland[a]	0.0	0.0	0.0	0.0	0.0	0.1			75.0
Ireland[a]	2.8	3.3	3.4	3.3	3.5	3.6	3.7		32.5
Italy	44.6				41.8	44.1			-1.1
Japan	19.3	20.0	20.5	20.7	21.7	23.4	23.6	23.8	23.2
Latvia[a]	0.3	0.2	0.2	0.2	0.3	0.3	0.4	0.4	55.8
Liechtenstein									
Lithuania	1.0								
Luxembourg	0.1				0.2	0.2			51.5
Monaco[a]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	111.8
Netherlands	5.3	5.6	6.2	6.7	6.9	7.9	8.5		60.4

New Zealand[a]	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	22.2
Norway	1.0	1.0	1.0	1.0	1.0	1.0	2.0	2.0	100.0
Poland[a,b]	7.0		6.0		6.0		7.2	7.1	1.2
Portugal	1.8	1.8	1.9	2.0	2.1				16.3
Romania[b]	16.6	11.6	13.3	12.9	12.6				-24.0
Russian Federation	17.4	16.3	14.2	13.5	11.1	10.3			-40.8
Slovakia[a]	0.6	0.6	0.8	0.7	0.7	0.7	0.9		50.0
Slovenia	0.5								
Spain	20.2	20.2	21.4	20.3	21.8	23.3			15.4
Sweden[a]	6.0	6.3	6.3	6.7	7.0	6.8	7.0	7.0	16.7
Switzerland[a]	1.4	1.5	1.6	1.8	1.9	2.0	2.1	2.2	54.7
Ukraine	6.7	0.6	0.8	0.8	0.7	0.7	0.5	0.4	-94.0
United Kingdom	16.7	17.0	17.1	17.7	19.0	20.3	22.0	23.2	39.5
United States of America	207.0	215.0	225.0	235.0	245.0	249.0	255.0	256.2	23.8

[a] The trend shown here may not be fully consistent since data for the entire period were not provided in the latest submission (see table 1 in section II of this document) and different sources of data were used.
[b] In accordance with decision 9/CP.2, some Parties with economies in transition use base years other than 1990: Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989).
[c] Estimates given here are rounded to the nearest tenth. Actual estimates rounded to the nearest hundredth are: 1990: 0.04; 1991: 0.04; 1992: 0.04; 1993: 0.04; 1994: 0.04; 1995: 0.07.
[d] Estimates given here are rounded to the nearest tenth. Actual estimates rounded to the nearest thousandth are: 1990: 0.003; 1991: 0.004; 1992: 0.004; 1993: 0.004; 1994: 0.005; 1995: 0.006; 1996: 0.006; 1997: 0.007.

Table B.14. N_2O emissions from industrial processes, 1990-1997 (Gigagrams and percentage)

	1990	1991	1992	1993	1994	1995	1996	1997	Change 1990 to latest reported estimate (%)
Australia	1.6	1.5	1.8	1.6	1.4	1.4	1.6		-3.1
Austria	0.6	0.6	0.5	0.6	0.6	0.5	0.5	0.5	-8.7
Belgium	11.5	11.2	10.1	10.9	12.3	13.8	14.0		22.1
Bulgaria[ab]	10.4	7.0	5.7	4.9	5.8	8.3		6.9	-33.2
Canada	37.0	35.0	35.0	32.0	38.0	37.0	40.0	34.0	-8.1
Czech Republic[a]	3.3	2.8	3.5	2.7	3.0	3.4	3.3	3.6	9.2
Denmark[a]									
Estonia									
Finland[a]	3.0	3.0	2.0	3.0	3.0	2.6	2.6	2.6	-13.3
France	87.4	87.7	81.7	72.9	77.4	80.4	79.9	80.6	-7.8
Germany	82.0	83.0	93.0	84.0	81.0	82.0	87.0	80.0	-2.4
Greece	2.3	1.9	2.0	1.9	1.8	1.8	1.8		-21.7
Hungary[ab]		0.0	0.0	0.0	0.0	0.0			-0.3
Iceland	0.2	0.2	0.1	0.1	0.1	0.1			-12.5
Ireland[a]	2.6	2.6	2.6	2.6	2.6	2.6	2.6		
Italy	23.5				20.6	20.4			-13.2
Japan	23.9	21.8	21.6	21.2	24.0	23.8	26.6	28.1	17.6
Latvia									
Liechtenstein									
Lithuania	1.4								
Luxembourg									
Monaco									
Netherlands	31.5	32.3	30.4	30.0	31.6	31.6	31.6		0.3

New Zealand									
Norway	7.0	6.0	4.0	5.0	5.0	5.0	5.0	5.0	-28.6
Poland[a][c]	20.0		13.0		14.0		16.2	15.7	-21.4
Portugal	1.9	1.9	1.9	1.9	1.9				
Romania[b]	24.4	6.4	6.8	6.5	5.6				-77.1
Russian Federation	3.0				1.2				-60.0
Slovakia[a]	2.1	1.5	1.4	1.1	0.8	1.1	1.1		-47.6
Slovenia									
Spain	10.4	9.5	8.1	6.7	8.0	8.4			-18.8
Sweden[a]	3.0	2.7	2.3	2.3	2.3	2.3	3.0	2.0	-33.3
Switzerland[a]	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	-3.1
Ukraine	22.9	23.1	15.3	7.5	9.1	4.7	7.4	8.5	-63.0
United Kingdom	95.3	89.1	72.0	61.3	72.6	63.5	67.7	69.4	-27.2
United States of America	96.0	98.0	94.0	99.0	105.0	106.0	109.0	91.8	-4.4

[a] The trend shown here may not be fully consistent of data since data for the entire period were not provided in the latest submission (see table 1 in section II of this document) and different sources of data were used.

[b] In accordance with decision 9/CP.2, some Parties with economies in transition use base years other than 1990: Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989).

[c] Estimates given here are rounded to the nearest tenth. Actual estimates rounded to the nearest thousandth are: 1991: 0.004; 1992: 0.003; 1993: 0.003; 1994: 0.003; 1995: 0.003.

Table B.15. N_2O emissions from agriculture, 1990-1997 (Gigagrams and percentage)

	1990	1991	1992	1993	1994	1995	1996	1997	Change 1990 to latest reported estimate (%)
Australia	63.0	63.3	61.8	62.7	62.2	63.4	62.0		-1.5
Austria	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	-1.2
Belgium	10.9	10.9	10.9	10.7	10.8	9.8	9.8		-9.9
Bulgaria[ab]	13.4	6.0	3.6	2.9	2.6	2.5		4.5	-66.3
Canada	110.0	110.0	110.0	100.0	120.0	120.0	130.0	130.0	18.2
Czech Republic[a]	2.3	2.0	1.7	1.8	1.8	1.7	20.6	19.3	737.2
Denmark[a]	33.0	32.0	32.0	31.0	30.0	30.0	30.2	29.8	-9.8
Estonia[a]	0.9	0.9	0.7	0.5	0.5	0.4	0.4	0.0	-95.6
Finland[a]	10.1	10.0	9.0	9.0	9.0	9.3	9.0	8.8	-12.9
France	182.0	180.2	175.1	169.8	171.2	172.1	174.9	177.9	-2.2
Germany	96.0	87.0	83.0	82.0	86.0	85.2	85.0	84.0	-12.5
Greece	20.6	20.5	19.5	19.3	19.8	18.6	19.5		-5.3
Hungary[ab]	4.6	1.7	1.6	1.5	1.8	1.6	1.7		-63.2
Iceland	0.2	0.2	0.2	0.2	0.2	0.2			-13.6
Ireland[a]	23.3	18.7	18.7	19.0	19.1	19.1	19.0		-18.7
Italy	75.0				75.9	75.9			1.2
Japan	9.3	9.1	9.0	9.0	8.8	8.5	7.6	6.5	-29.6
Latvia[a]	22.0	19.3	18.8	17.0	16.3	15.7	15.6	3.1	-85.8
Liechtenstein									
Lithuania	10.8								
Luxembourg	0.5				0.5	0.5			
Monaco									
Netherlands	22.2	22.9	26.2	26.2	26.4	27.6	27.5		23.9
New Zealand[a]	36.3	35.8	35.8	36.2	36.6	36.6	36.5	36.2	-0.1

Norway	9.0	10.0	9.0	9.0	9.0	9.0	9.0	9.0	
Poland[a,b]	43.0		32.0		30.0		30.5	31.2	-27.4
Portugal	7.4	7.4	7.2	7.1	7.2				-2.6
Romania[b]	25.3	6.7	6.8	6.8	6.8				-73.1
Russian Federation	200.0				110.0				-45.0
Slovakia[a]	9.5	8.5	6.5	5.0	5.4	5.4	5.5		-42.1
Slovenia	4.6								
Spain	63.5	62.8	61.9	60.0	57.5	58.6			-7.8
Sweden[a]	17.0	0.2	0.2	0.2	0.2	0.2	17.0	16.0	-5.9
Switzerland[a]	9.2	9.2	9.2	9.1	8.9	8.8	8.7	8.5	-7.7
Ukraine	28.0	27.4	21.3	15.7	9.6	9.4	5.9	6.5	-76.8
United Kingdom	100.4	99.9	94.3	92.5	95.0	95.4	96.0	98.9	-1.5
United States of America	805.0	817.0	838.0	827.0	905.0	865.0	887.0	913.6	13.5

[a] The trend shown here may not be fully consistent since data for the entire period were not provided in the latest submission (see table 1 in section II of this document) and different sources of data were used

[b] In accordance with decision 9/CP.2, some Parties with economies in transition use base years other than 1990: Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989).

Table C.1. Emission estimates for the European Community, 1990[a]

	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total national emissions and removals[b]	3 458 405	286 846	23 074	1 261	13 350	50 155	15 034
1 Energy	3 163 304		5 333	172	13 083	45 973	9 024
A Fuel combustion	3 141 345		836	172	13 058	45 831	7 636
1 Energy industries	1 150 888		54	64	2 935	1 020	98
2 Manufacturing industries and construction	636 820		64	36	1 606	3 487	145
3 Transport	694 747		251	37	7 069	32 842	6 320
4 Other sectors	635 610		461	35	1 311	8 313	1 044
5 Other	23 287		4	1	137	169	29
B Fugitive emissions from fuels	21 960		4 497	1	25	142	1 388
1 Solid fuels	4 416		2 935		2	59	14
2 Oil and natural gas	17 584		1 562	1	23	83	1 375
2 Industrial processes	150 957		21	359	187	2 687	818
A Mineral products	96 302		0		43	21	23
B Chemical industry	10 568		6	319	78	41	370
C Metal production	24 423		8	0	21	2 407	20
D Other production	5 928				1	8	172
E Production of halocarbons and sulphur hexafluoride							
F Consumption of halocarbons and sulphur hexafluoride							
G Other	3 822				14	4	63
3 Solvent and other product use	5 479			9	0	2	4 182
4 Agriculture			9 280	667	27	839	293
A Enteric fermentation			6 770				
B Manure management			2 039	43			1
C Rice cultivation			116	1			
D Agricultural soils			312	624	6		208
E Prescribed burning of savannas							
F Field burning of agricultural residues			43	0	21	839	83
G Other							
5 Land-use change and forestry	129 895	286 846	301	39	3	121	605
A Changes in forest and other woody biomass stocks	84 430	248 362					
B Forest and grassland conversion	35 310		14	0	3	121	8
C Abandonment of managed lands		1 524					
D CO_2 emissions and removals from soil	6 488	4 415					9
E Other	3 667	32 546	288	39			589
6 Waste	7 344		8 139	12	50	533	113
A Solid waste disposal on land	1		6 840		5	59	53
B Waste-water handling	1 352		646	6			5
C Waste incineration	5 891		25	2	42	461	33
D Other	100		630	3	1	13	20
7 Other	1 327		2	4			
Memo items:							
International bunkers	169 640		12	4	1 512	306	182
Aviation	60 209		5	1	251	188	65
Marine	109 430		6	4	1 260	120	117
CO_2 emissions from biomass	118 014						

[a] Estimates for the various categories given here do not necessarily correspond to the total emissions of these categories reported separately by individual member States of the European Community, which are given in tables A.1-A.17 and B.1-B.15.

[b] Total national emissions of CO_2, excluding land-use change and forestry (corresponding to format in tables A.3 and B.3), are 3,328,510 Gg.

Table C.2. Emission estimates for the European Community, 1994[a]

	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total national emissions and removals[b]	3 334 835	320 407	20 886	1 179	11 939	42 376	13 373
1 Energy	3 056 774		4 328	185	11 714	38 799	7 713
A Fuel combustion	3 037 554		732	184	11 692	38 689	6 442
1 Energy industries	1 062 542		59	60	2 295	926	103
2 Manufacturing industries and construction	590 954		57	31	1 431	3 456	143
3 Transport	740 822		218	56	6 614	27 354	5 219
4 Other sectors	629 151		383	32	1 245	6 837	948
5 Other	14 083		15	4	104	119	28
B Fugitive emissions from fuels	19 223		3 596	1	24	109	1 272
1 Solid fuels	213		1 938		1	55	8
2 Oil and natural gas	19 009		1 658	1	23	56	1 264
2 Industrial processes	138 573		24	316	145	2 359	734
A Mineral products	87 020		0		42	21	19
B Chemical industry	8 882		6	274	33	23	345
C Metal production	19 576		7	0	18	2 052	17
D Other production	6 540				1	8	173
E Production of halocarbons and sulphur hexafluoride							
F Consumption of halocarbons and sulphur hexafluoride							
G Other	3 048				6	43	26
3 Solvent and other product use	5 123		0	9	0	2	3 931
4 Agriculture			8 876	613	18	508	225
A Enteric fermentation			6 415	8			
B Manure management			1 969	39			1
C Rice cultivation			164	1			
D Agricultural soils			302	565	6		185
E Prescribed burning of savannas							
F Field burning of agricultural residues			27	0	11	508	39
G Other							
5 Land-use change and forestry	126 027	320 407	311	41	2	76	643
A Changes in forest and other woody biomass stocks	82 957	274 892					
B Forest and grassland conversion	33 088		9	0	2	76	3
C Abandonment of managed lands		7 360					
D CO_2 emissions and removals from soil	6 315	5 611		1			9
E Other	3 667	32 546	302	40			631
6 Waste	7 530		7 345	12	59	631	129
A Solid waste disposal on land	1		6 533		6	64	61
B Waste-water handling	1 412		683	10			6
C Waste incineration	6 117		31	3	49	553	38
D Other			98	0	4	15	24
7 Other	809		2	4			
Memo items:							
International bunkers	185 027		1 858	7	1 571	382	191
Aviation	73 464		1 856	3	313	254	80
Marine	111 198		4	4	1 259	128	111
CO_2 emissions from biomass	102 792						

[a] Estimates for the various categories given here do not necessarily correspond to the total emissions of these categories reported separately by individual member States of the European Community, which are given in tables A.1-A.17 and B.1-B.15.

[b] Total national emissions of CO_2, excluding land-use change and forestry (corresponding to format in tables A.3 and B.3), are 3,208,808 Gg.

Table C.3. Emission estimates for the European Community, 1995[a,b]

	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total national emissions and removals[c]	3 376 579	312 576	20 663	1 189	11 692	41 335	12 932
1 Energy	3 093 619		4 346	193	11 469	37 796	7 369
A Fuel combustion	3 074 410		742	192	11 444	37 689	6 202
1 Energy industries	1 078 063		64	65	2 237	920	105
2 Manufacturing industries and construction	589 548		59	33	1 468	3 491	143
3 Transport	751 550		219	59	6 384	26 321	5 001
4 Other sectors	640 660		397	34	1 262	6 852	940
5 Other	14 599		3	1	95	105	14
B Fugitive emissions from fuels	19 211		3 603	1	24	107	1 167
1 Solid fuels	3 690		1 991		2	61	9
2 Oil and natural gas	15 560		1 612	1	23	46	1 158
2 Industrial processes	139 752		22	314	147	2 374	721
A Mineral products	92 239		0		43	21	18
B Chemical industry	9 325		6	273	31	25	339
C Metal production	20 762		6	0	19	2 092	17
D Other production	1 087				1	1	175
E Production of halocarbons and sulphur hexafluoride							
F Consumption of halocarbons and sulphur hexafluoride							
G Other	2 828				8	45	28
3 Solvent and other product use	5 164			9	0	2	3 859
4 Agriculture			8 774	614	17	457	221
A Enteric fermentation			6 228				
B Manure management			2 102	38			1
C Rice cultivation			119	0			
D Agricultural soils			302	576	6		184
E Prescribed burning of savannas							
F Field burning of agricultural residues			24	0	10	457	36
G Other							
5 Land-use change and forestry	129 212	312 576	305	42	3	87	627
A Changes in forest and other woody biomass stocks	85 879	268 698					
B Forest and grassland conversion	33 045		10	0	3	87	4
C Abandonment of managed lands		8 081					
D CO_2 emissions and removals from soil	6 621	5 309	1	0			9
E Other	3 667	30 489	294	42			614
6 Waste	7 797		7 215	12	57	618	132
A Solid waste disposal on land	4		6 411		6	64	61
B Waste-water handling	1 556		678	10			6
C Waste incineration	6 235		31	3	49	540	58
D Other	2		95	0	2	15	29
7 Other	1 032		2	4			1
Memo items:							
International bunkers	190 117		1 858	6	1 626	393	197
Aviation	77 184		1 856	3	337	263	85
Marine	112 932		4	3	1 288	129	113
CO_2 emissions from biomass	107 504						

[a] Estimates for the various categories given here do not necessarily correspond to the total emissions of these categories reported separately by individual member States of the European Community, which are given in tables A.1-A.17 and B.1-B.15.

[b] These estimates consist partly of 1995 and partly of 1994 data (for Portugal).

[c] Total national emissions of CO_2, excluding land-use change and forestry (corresponding to format in tables A.3 and B.3), are 3,247,367 Gg.

Table C.4. Emission estimates for the European Community, 1996[a,b]

	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total national emissions and removals[c]	3 466 381	319 451	20 170	1 227	11 120	39 742	12 222
1 Energy	3 186 521		4 234	200	10 904	36 247	6 978
A Fuel combustion	3 166 545		769	199	10 880	36 141	5 830
1 Energy industries	1 104 689		69	67	2 173	857	108
2 Manufacturing industries and construction	586 374		58	32	1 403	3 429	144
3 Transport	759 677		215	66	5 929	24 725	4 616
4 Other sectors	700 609		423	33	1 298	7 044	949
5 Other	15 294		3	2	75	85	15
B Fugitive emissions from fuels	19 978		3 465	1	24	106	1 148
1 Solid fuels	3 555		1 818		1	60	9
2 Oil and natural gas	16 443		1 648	1	23	45	1 138
2 Industrial processes	137 622		21	325	140	2 332	689
A Mineral products	94 000		0		43	22	17
B Chemical industry	9 482		6	287	33	25	329
C Metal production	20 590		6	9	23	2 114	18
D Other production	1 139				1	1	212
E Production of halocarbons and sulphur hexafluoride							
F Consumption of halocarbons and sulphur hexafluoride							
G Other	4 672				19	42	26
3 Solvent and other product use	5 007			9	0	2	3 699
4 Agriculture			8 752	634	17	457	168
A Enteric fermentation			6 207				
B Manure management			2 100	41			1
C Rice cultivation			119	0			
D Agricultural soils			302	593	6		123
E Prescribed burning of savannas							
F Field burning of agricultural residues			24	0	10	457	36
G Other							9
5 Land-use change and forestry	128 509	319 451	303	43	3	87	557
A Changes in forest and other woody biomass stocks	85 251	275 677		1			
B Forest and grassland conversion	32 730		10	9	3	87	4
C Abandonment of managed lands		7 886					
D CO_2 emissions and removals from soil	6 861	5 399		1			
E Other	3 667	30 489	296	42			553
6 Waste	7 629		6 856	12	55	617	130
A Solid waste disposal on land	1		6 052		6	94	80
B Waste-water handling	1 440		678	10			6
C Waste incineration	6 188		30	3	47	539	37
D Other			96	0	2	15	27
7 Other	1 032		2	4			1
Memo items:							
International bunkers	195 495		1 859	7	1 601	484	197
Aviation	79 329		1 856	3	341	265	86
Marine	116 165		3	4	1 260	119	110
CO_2 emissions from biomass	137 343						

[a] Estimates for the various categories given here do not necessarily correspond to the total emissions of these categories reported separately by individual member States of the European Community, which are given in tables A.1-A.17 and B.1-B.15.

[b] These estimates consist partly of 1996 and partly of 1994 (Portugal) and 1995 data (Italy and Spain).

[c] Total national emissions of CO_2, excluding land-use change and forestry (corresponding to format in tables A.3 and B.3), are 3,337,872 Gg.

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